Telephone Engineer and Management

TECHNOLOGY DEPT.

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FEBRUARY 15, 1957

THE NATIONAL TELEPHONE MAGAZINE

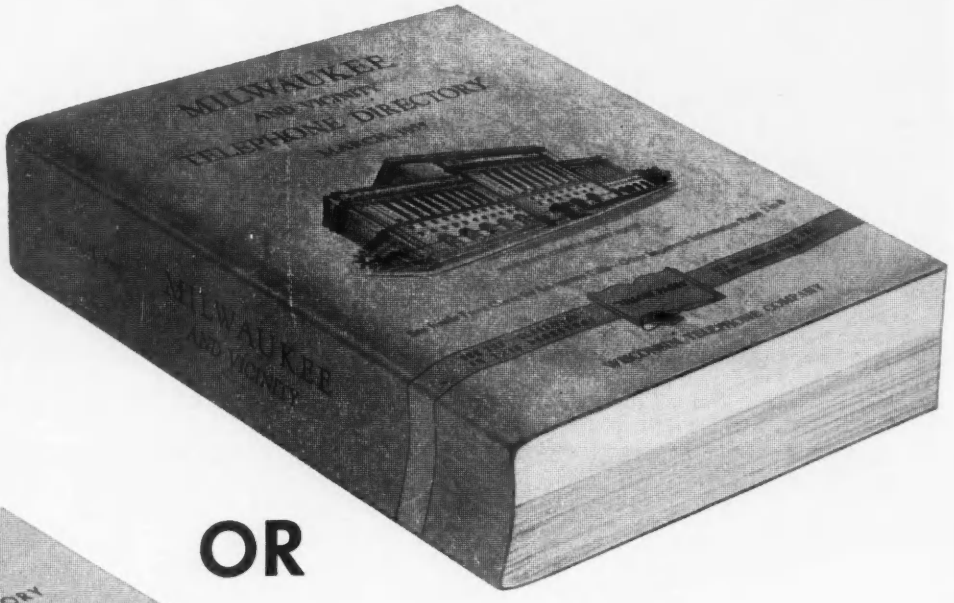
V.61 #4

FEATURING IN THIS ISSUE

The Industry's Maintenance Problems
Modern Cable Construction Methods
Profits & Service Through Better Management

INCREASE YOUR PROFITS!

LARGE



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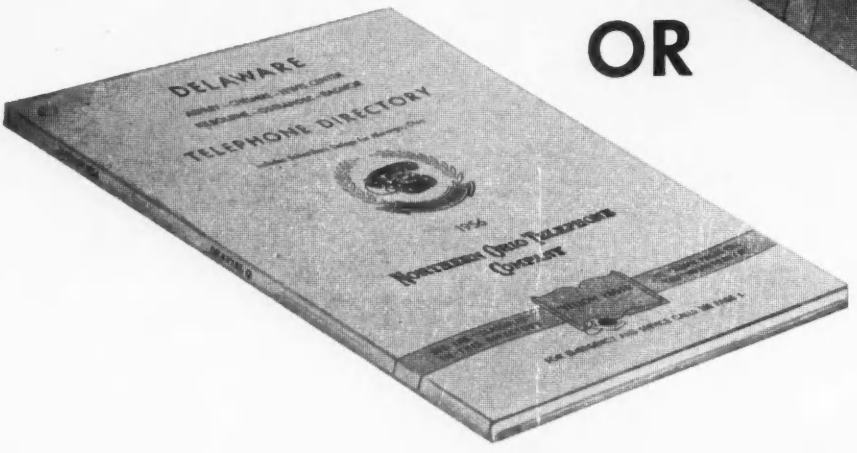

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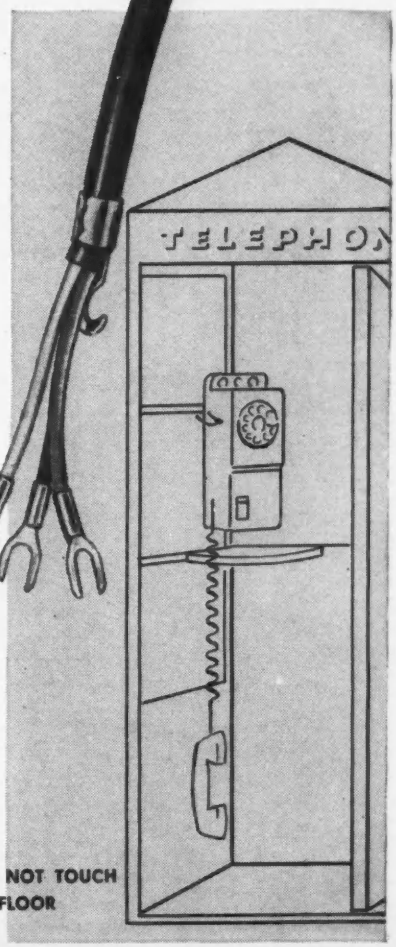

CAN NOT TOUCH THE FLOOR

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*KOILED KORDS is a trade mark of KOILED KORDS, INC.

Koiled Kords

INCORPORATED, BOX K, NEW HAVEN 14, CONN.

BIG HIT

AUTOMATIC'S "80-SERIES" PAYSTATIONS

Anyway you figure it, the new AUTELCO paystations will be a "box office" hit with users. One reason is they're in color—8 different colors, as well as black. Paystations in color are easier to see—and they actually add attractiveness to their surroundings.

Equally important: AUTELCO paystations now have all the famous Type 80 Telephone features. These include an easier-to-hold handset, moistureproof Koiled Kord and greatly improved true-to-life transmission.

Maybe you've already guessed that AUTELCO "80-series" paystations have what it takes to really boost revenue. For all the facts, plus full ordering information, write for Circular 1877. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

TELEPHONE ENGINEER & MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

FEBRUARY 15, 1957

Vol. 61 No. 4

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FRONT COVER

THE JOHN B. LONG AWARD for the best General Telephone Co. of Calif., story of 1956 was awarded by HARLAN W. HOLMWOOD (center), executive vice president, to CHESTER R. Baldwin (left), manager of General's Downey exchange and A. G. COOLEY (right), central division manager at the first annual General Telephone Co., of California press conference held at the California Country Club in Whittier. The award was made to Baldwin and Cooley for their efforts in promoting the cooperation of the *Artesia News* to write a story about bedfast BOBBY GOAR of Artesia, a post-polio patient who participated in class room discussions from his home through the aid of General Telephone Co., equipment. The trophy held by Holmwood will be rotated to the winning division annually, whereas the plaques held by Baldwin and Cooley will remain in the permanent possession of the Downey office.

IN THE NEXT ISSUE

The March 1 issue of TELEPHONE ENGINEER & MANAGEMENT will feature these helpful articles: — (1) "Problems of Small Community Operations;" (2) "Planning Plant Practices;" (3) "The Independent Company and DDD" — plus "Handbook Data Sheets," the TELEPHONE ENGINEER & MANAGEMENT "Operating Manual," and all the regular Telephone Engineer & Management features.

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Keystone steel telephone wire stays up a few years longer. A different method of galvanizing provides an exceptionally pure coating of zinc that is a little thicker—giving you a plus value.

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The most popular anchor sold today. Sturdily built to stay put in the ground—they truly give you a plus value.

Depend on Suttle for your Supplies and Equipment. We do our best to serve you well.

See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

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COMING CONVENTIONS

MINNESOTA Telephone Association, Inc., Radisson Hotel, Minneapolis, Feb. 18-20.

LOUISIANA Telephone Association, Captain Shreve Hotel, Shreveport, Feb. 27-28.

KENTUCKY Independent Telephone Association, Phoenix Hotel, Lexington, Mar. 5.

TEXAS Telephone Association, Gunter Hotel, San Antonio, Mar. 28-29.

IOWA Independent Telephone Association, Fort Des Moines Hotel, Des Moines, Apr. 2-3.

OHIO Independent Telephone Association, Deshler Hilton Hotel, Columbus, Apr. 16-17.

INDIANA Telephone Association, Claypool Hotel, Indianapolis, May 8-9.

WISCONSIN State Telephone Association, (Hotel Not Selected) May 15-16.

ILLINOIS Telephone Association, Pere Marquette, Peoria, May 22-23.

KANSAS Telephone Association and **MISSOURI** Telephone Association, Town House Hotel, Kansas City, Kans., May 27-28.

PENNSYLVANIA Independent Telephone Association, Buck Hill Falls Inn, Buck Hill Falls, June 4-5.

MAINE Telephone Association, **NEW HAMPSHIRE** Telephone Association, and **VERMONT** Telephone Association, Wentworth-by-the-Sea Hotel, Portsmouth, N. H., June 4-6.

CALIFORNIA Independent Telephone Association, Ambassador Hotel, Los Angeles, June 5-6-7.

WASHINGTON Independent Telephone Association, and **OREGON** Independent Telephone Association, Davenport Hotel, Spokane, Wash., June 13-14-15.

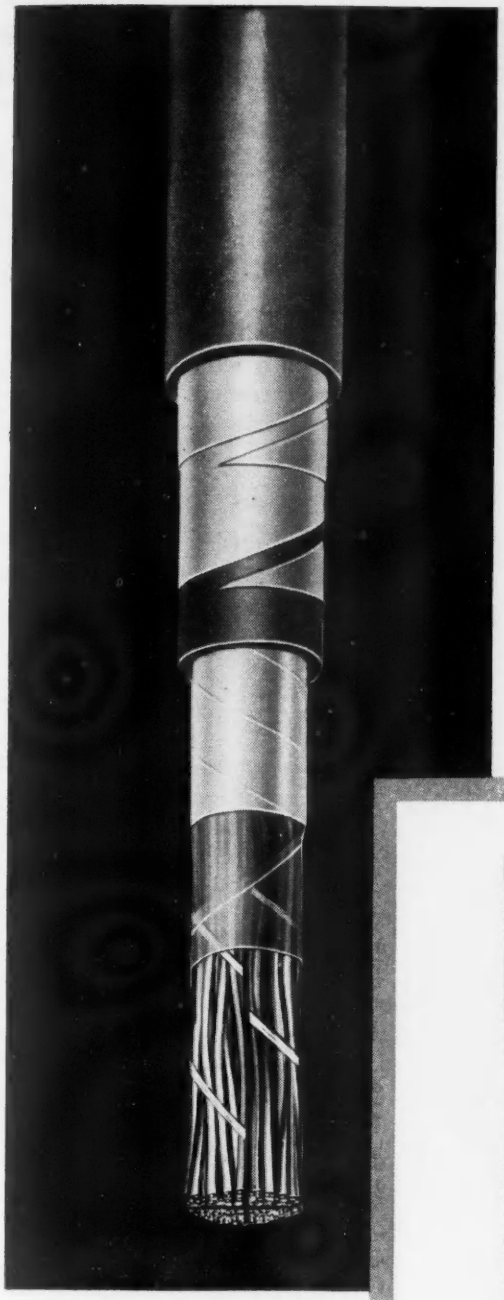
NEW YORK State Telephone Association, Scaroon Manor, Schroon Lake, June 17-19.

ARKANSAS Telephone Association, Arlington Hotel, Hot Springs, Sept. 16-17.

ROCKY MOUNTAIN Telephone Association, Hotel Utah, Salt Lake City, Sept. 19-20.

NORTH CAROLINA Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 3-4.

UNITED STATES Independent Telephone Association, Conrad Hilton Hotel, Chicago, Oct. 14-16.



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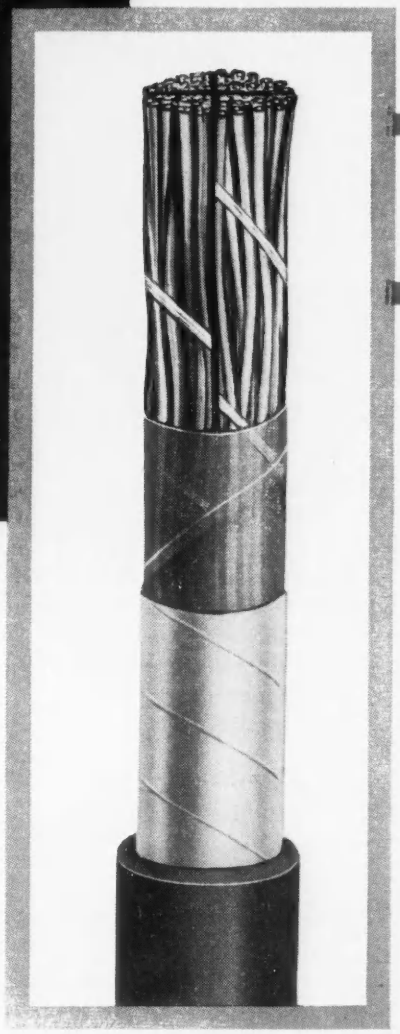

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***and now in* 26, AWG**

Superior electrical quality and tough, high-molecular-weight polyethylene jacket ensure permanent high quality transmission. Withstands abrasion, bending, effects of sunlight or chemicals, low temperature deformation or cracking.

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***for quality and service . . .* specify GENERAL CABLE**

"Morrison Booster"

TO THE EDITORS: ". . . This is to extend my congratulations on your publication of Mr. James L. Morrison's series of articles entitled 'Profits & Service Through Better Management'.

"It is suggested that after the series has been published you make available in either book form or reprint form the complete series that we may keep copies for reference, review and training.

"It will be appreciated if you will convey to Mr. Morrison our appreciation for the work he has done on these articles and let him know that the information he has compiled is serving a very useful purpose."

J. K. Galloway,
Executive Vice President,
The Winter Park Tel. Co.,
Winter Park, Fla.

Editors Note: — The mail is heavy with favorable comments on Jim Morrison's articles and we're glad to report that "Profits and Service Through Better Management" will be published in book form in August or September. We will let you know the exact date.

Letter From Canada

TO THE EDITORS: — ". . . Please send me collect one copy of your booklet 'The Independent Company and Nationwide Toll Dialing' . . . We find your magazine exceedingly interesting and a valuable aid in keeping up with telephone developments in this fast moving age."

E. V. Hird,
Applications Enginering Dept.,
Lenkurt Electric Co., of Canada,
Vancouver, B. C.

"A Helpful Idea"

TO THE EDITORS: — . . . "Following is a little kink which may be of interest and help to other telephone men:

Glue or cement a piece of thin sheet foam rubber to the bottom of fragile table test instruments, such as voltmeters, ammeters, milohmmeters, etc. This will keep the instruments from sliding and reduce vibration, in turn minimizing inaccurate readings, necessity of adjustment and possible damage in the case of any hard knocks.

Maurice Peacock, Jr.
Radnor, Pa.

Editor's Note: — Now that you've read Mr. Peacock's helpful idea, how about sending us information on your pet time-saver?

Cover Photos

TO THE EDITORS: — " . . . You can rest assured that your *"Telephone Engineer and Management"* magazine is well read! I have had so many nice letters and I want to thank you so very much for your kindness in placing the picture on the front cover of your January 1 issue. Since I have had many requests from members of the Association as well as 'family' for copies, will you please forward me 15 or 20 additional copies?

Josephine Poppleton, Secy-Treas.
Florida Telephone Association,
Tampa, Florida

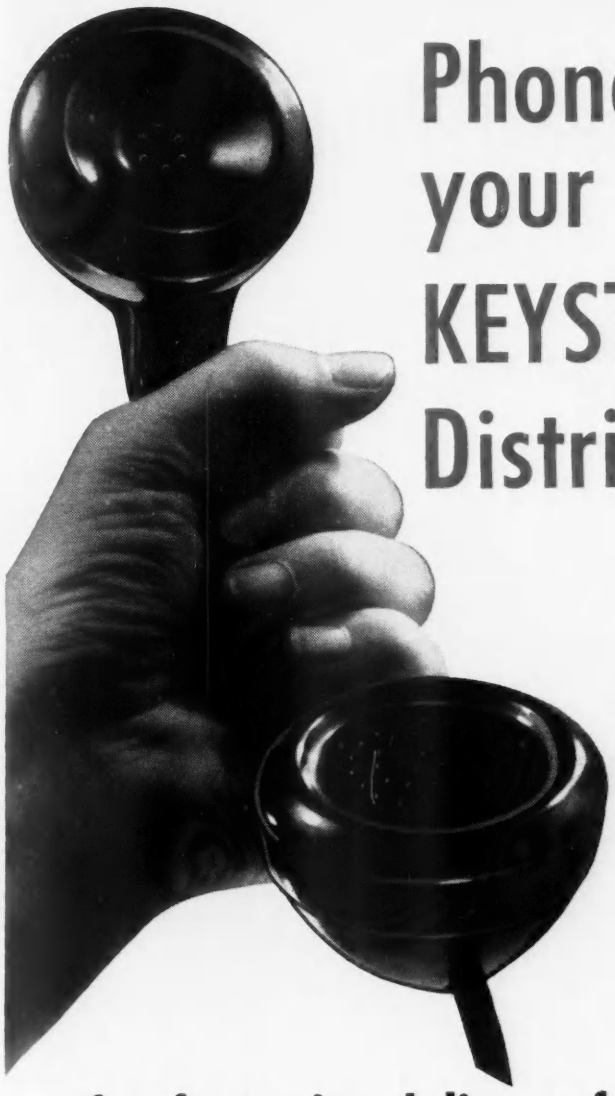
TO THE EDITORS: — . . . "We wish to thank you for putting our picture on the front cover of *Telephone Engineer & Management.* We would like to have 12 copies of the January 15 issue. Thank you again."

W. L. Jennings,
Public Service Telephone Co.,
Montrose, Mich.

Letter From Japan

TO THE EDITOR:—"All military personnel connected with telephone work that I have talked to and myself, that occur in the telephone industry." agree that your publication is the best material available to keep abreast with the new developments and ideas that occur in the telephone industry.

James H. Bouldin,
T/Sgt., USAF,
NCOIC, Inside Plant,
Tachikawa AF Base, Japan.



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When wire is needed, call your Keystone Wire Distributor. His stocks are well supplied. He can give you prompt delivery in any emergency.

Keystone Telephone Wire is available in a full range of Class A line wire in 50M, 85M, and 135M tensile strengths, and meets the specifications of A.S.T.M., A.T.&T. and is approved by R.E.A. Galvanized bond, tie and construction wire are also available at your Keystone Distributor.

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Wire for the Telephone Industry

. . . by the makers of famous Red Brand Fence

"what's new in station protectio

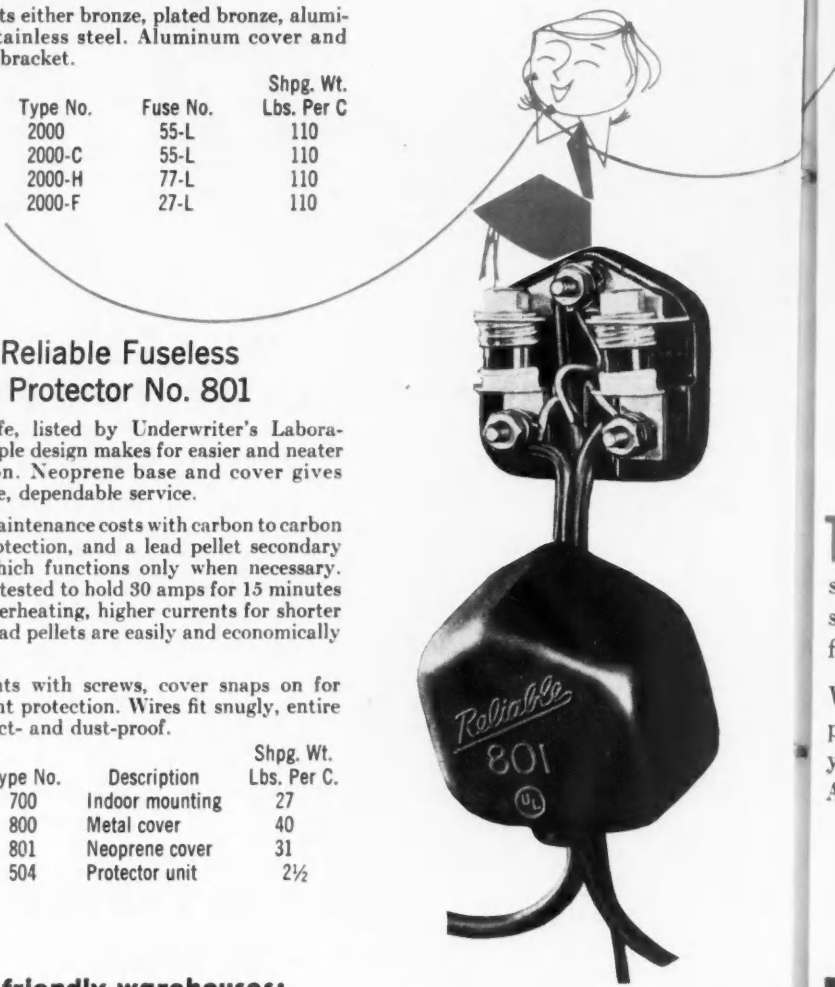
New! Reliable 2000-Series Outdoor Protector

Simply and neatly installed. Wired and mounted without removing fuses or bracket. Clearly marked binding posts opposite fuses. Molded phenolic fuse mount reverses to suit station conditions.

Contoured shield aligns interior wires, keeps them away from line side of fuse connections. Tapered, neoprene base has wire entrance sealing slots; cover fits insect and weather tight.

Metal parts either bronze, plated bronze, aluminum or stainless steel. Aluminum cover and mounting bracket.

Cat. No.	Type No.	Fuse No.	Shpg. Wt. Lbs. Per C
S-8290	2000	55-L	110
S-8292	2000-C	55-L	110
S-8294	2000-H	77-L	110
S-8296	2000-F	27-L	110



New! Reliable Fuseless Station Protector No. 801

Proven safe, listed by Underwriter's Laboratories. Simple design makes for easier and neater installation. Neoprene base and cover gives trouble free, dependable service.

Reduces maintenance costs with carbon to carbon air gap protection, and a lead pellet secondary element which functions only when necessary. Protectors tested to hold 30 amps for 15 minutes without overheating, higher currents for shorter periods. Lead pellets are easily and economically replaced.

Base mounts with screws, cover snaps on for weathertight protection. Wires fit snugly, entire unit is insect- and dust-proof.

Cat. No.	Type No.	Description	Shpg. Wt. Lbs. Per C.
S-2237	700	Indoor mounting	27
S-2236	800	Metal cover	40
S-2241	801	Neoprene cover	31
S-2238	504	Protector unit	2½

Automatic's 5 friendly warehouses:

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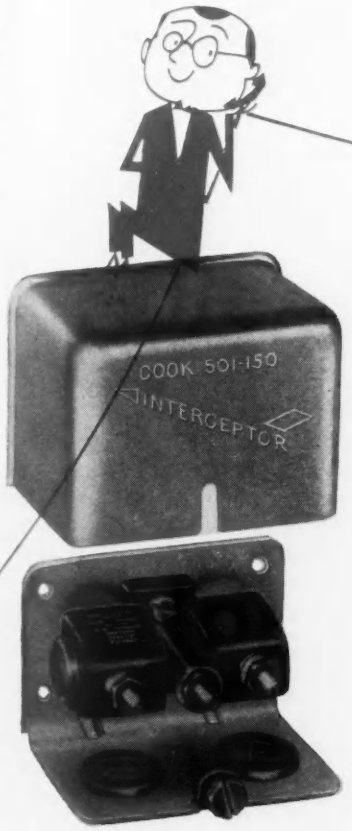
at Automatic Electric?"



New! Cook Interceptor Fuseless Protector

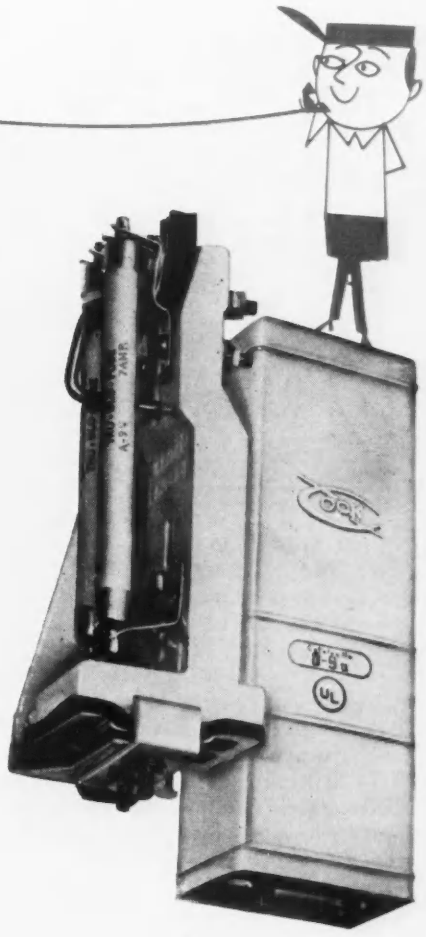
Simple, compact, effective—the new Interceptor combines economical, easy to install protection with minimum maintenance.

Interceptor base is moulded Bakelite with heavy everdur terminal and ground studs. For outdoor mounting the base is enclosed in corrosion-resistant, weatherproof metal housing with grommetted bracket. Indoor model does not have metal housing.

Arrestor units consist of two #41-350 Minigaps both of which will pass a current of 30 amps for 15 minutes without destruction. Discharge flow is provided with a thermoplastic acetate dielectric between the two carbons.

Minigaps are screw mounted in Bakelite base with ground stud moulded in.

Cat. No.	Type No.	Description	Wt. Per 100, Lbs.
S-2231	501-150	Outdoor Model	56
S-2232	501-165	Indoor Model	30
S-2233	41-350	Minigap	2½



TELEPHONE MEN (and women, too) count on Automatic's Supply Service to provide the latest in telephone supply products from dependable manufacturers. The items shown here, for instance, are all U. L. listed, field tested for trouble-free operation.

When you order supplies, don't forget these improved station protectors. Remember, you'll get speedy service by calling your Automatic Representative or your nearest A. E. Sales Corporation warehouse.

New! Cook 0-9u Sub Station Protector

A single circuit protector for indoor or outdoor installation. Equipped with one pair of fuses and one pair of high potential dischargers.

Body is white glazed, low absorbent porcelain. Fuse and lightning arrester clips are of phosphor bronze. Lightning arresters consist of two Tru Gap dischargers and two flat carbons mounted on copper ground strip.

Neoprene gaskets keep out insects, dust, snow, etc. Removable locking device on base.

Cat. No.	Type	Description	Wt., Lbs.
S-8600	0-9u	7 amp, A-9u Lavite Fuses	1¼
S-2201	07	5 amp, A-7 Wood Fuses	1¼
S-8532	07	7 amp, A-7 Wood Fuses	1¼
S-2206	012	5 amp, A-12 Lavite Fuses	1½
S-2208	052	7 amp, A-52 Fibre Fuse	2

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

Superior's

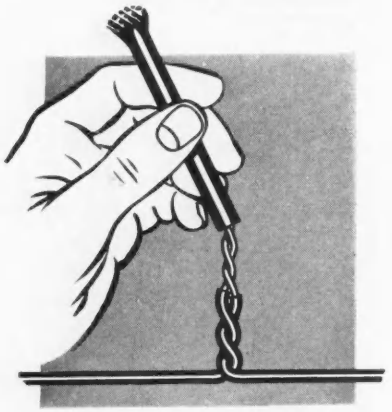
"Super-Splice"®

is

safe

and

sure!



"Super-Splice" makes splices waterproof . . . from inside out!

Sealed at one end, this plastic splice sleeve is filled with an insulating and waterproofing compound.*

Economical "Super-Splice," a Superior exclusive, makes the splice permanently as good as the cable . . . yet it can be re-entered easily. The compound never hardens or oozes out no matter what the temperature.

Prevent leakage currents and breakdowns in the presence of moisture...good for 25,000 v.d.c. Order "Super-Splice" NOW!

*A Dow-Corning silicone compound.

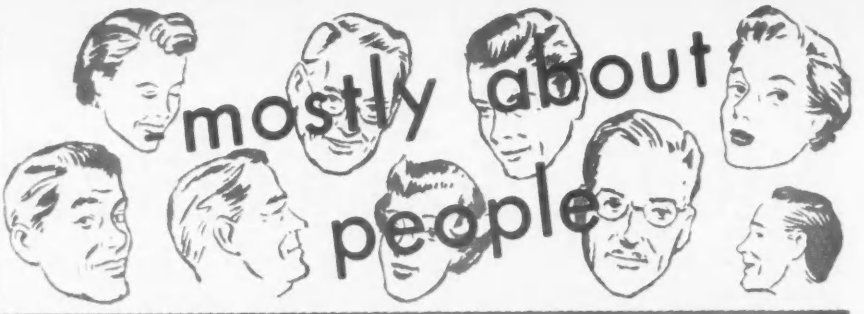
An REA Standard.

"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina



ACROSS THE EDITOR'S DESK

Frank E. Bohn

THE TRIBUTE to *Frank E. Bohn* carried in the February *Newsletter* of the Indiana Telephone Association was written by *W. H. (Bill) Beck*, who served for many years as sec.-treas. and general manager of that association. To those of you that have not as yet read the article we recommend you do so as it depicts the *Frank Bohn* story in well chosen words.

Frank E. Bohn, according to the above tribute is now signing his letters as "*Retired.*" Starting his career with the Home Tel. & Tel. Co. (now General Telephone Co. of Indiana) at Ft. Wayne as a clerk he progressed through the years to its presidency and for the last eight years as chairman of the board.

His service to the United States, to Indiana and to Ft. Wayne is an outstanding one from a dedicated leader. The succeeding company to the Home company has named Mr. Bohn to its board, and as Mr. Beck says "the industry is indeed fortunate to have the continuance of his wise counsel."

We have known and respected Mr. Bohn for many years both for his contributions to Independent telephony and for his warm personal friendship with this writer. We wish it had been our assignment to eulogize Mr. Bohn for the Indiana association whom he served for so many years but at the same time we realize the opportunity for Mr. Beck was really a labor of love and esteem.

Walter L. Lawrence

CONGRATULATIONS to *Walter L. Lawrence*, staff sales engineer of the Automatic Electric Sales Corp., Chicago, on his completion of 30 years of service to that company and to the industry. Walt is well known throughout the country and has many friends who will be wishing to congratulate him. His service anniversary was announced by his company last month.

Rodney M. Coggin

THE Distinguished Citizen Award for 1956 was presented to *Rodney M. Coggin*, president of the Tidewater Telephone Co., by *Richmond County*, at Warsaw, Va., on January 22. A plaque synonymous of the award is made annually by the Ruritan Club on nomination by a committee representative of all civic clubs in the county.

Mr. Coggin is a well known telephone man nationally and his neighbors and business friends eulogize his record with the Tidewater company. He organized the company in 1945 and started with some 85 persons. At the end of 1956 the company now employs some 175 and serves more than 15,500 employes. We join the industry in congratulating Rodney.

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If you are not a regular reader of TELEPHONE ENGINEER and MANAGEMENT you will probably wish to place yourself in position to receive the big Spring Construction issue . . . plus . . . 23 other big issues that will be of help to you every day throughout the year.

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IT'S IRRADIATED!

SUPERIOR TELEPHONE CABLE

Superior Cable contains a tape, marked at one-foot intervals up to 10,000 feet, that guarantees the footage you receive and lets you measure the footage you use.

Contains a polyethylene tape developed by radiation chemistry!*

Install SUPERIOR Telephone Cable for better round-the-clock performance with minimum maintenance.

All-plastic SUPERIOR Cable is irradiated* . . . has double the dielectric strength for far greater lightning protection! Its resistance to moisture, ozone, oils, acids and alkalis makes it ideal for either aerial or direct burial installations! The insulation is "graded" to conductor sizes . . . to closely match the universal transmission standards for loading coils and terminating equipment! The deviation in mutual capacitance is now less than 1½%!

For better round-the-clock performance at less cost, order SUPERIOR CABLE. Available with regular spiral shield (5 mil aluminum) or, in certain sizes at slight additional cost, longitudinal shield (8 mil aluminum).

SUPERIOR CABLE is accepted by REA and conforms to REA Spec. PE 14.

*Irradiated polyethylene film, a General Electric Product.

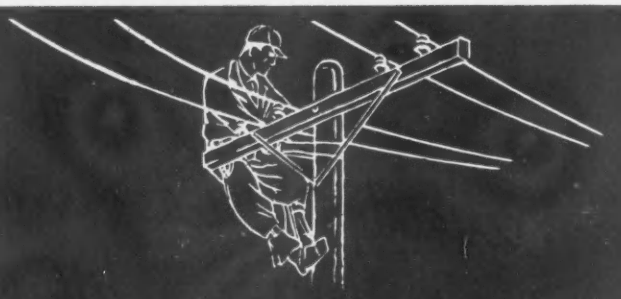
For detailed information and price, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION

Hickory, North Carolina

INDUSTRY NEWSLETTER



Seminar For Engineers

DEFINITE plans for first annual USITA Seminar for Telephone Engineer are in the making. The USITA Personnel Subcommittee on Engineering Education has announced that 4-week session will be held at Kellogg Center on campus of Michigan State University, Lansing. Tentative dates for 1957 Seminar are June 30 thru July 27. Registration will be limited to 75 participants. Tentative curriculum is designed to treat advanced engineering techniques and significant new frontiers of technology in the light of economic selection and management decision. As such, it is anticipated that engineering personnel associated with any of the research, manufacturing, supply or operating segments of the industry can participate and benefit.

REA Interest Rate May Go Up

THE present Congress may increase interest rate on REA telephone loans as result of recommendation made by President Eisenhower in his budget message. President said interest rate on government-guaranteed and direct loans to veterans should be raised, and that Congress should consider boosting interest rates on Rural Electrification, college housing, Farmers Home Administration, and other loans. The President pointed out that interest rates were set by statute at 2 percent, substantially below present cost of long-term money to Treasury of about 3⅜ percent. He asked appropriation of $60 million in new funds for telephone lending program. Estimated carry-over from fiscal year is $31.3 million and recisions of $1 million are expected, making total available of $92.3 million. REA expects to lend about $80 million during next fiscal year, which is approximately same amount as is being loaned in current period.

Growth & Expansion

THE United States Independent Telephone Assoc. (USITA) reported last month that information reaching it from various quarters indicates large expenditures for growth and expansion by Independent companies during 1956, and a continuation of big capital outlays in 1957.

General Tel. Corp., which had construction expenditures of approximately $150,000,000 last year, plans to spend $167,000,000 this year. General is looking forward to the day not far distant when it will be serving 3,000,000 stations. The Lorain (Ohio) Tel. Co. is planning to invest $2.5 million in 1957 and will add 3,000 stations to the present station count for 35,600. Inter-County Tel. & Tel. Co., Fort Myers, Fla., reports to shareholders a station gain of 4,500 in 1956, for a total of 30,000 telephones, and says that 1957 capital requirements will again be substantial. Southern Nevada Tel. Co., whose 1954 capital investment of $2,000,000 was increased to $12,000,000 in two years, plans to spend another $4,500,000 by June 1958. Between June of 1954 and October of 1956, the company installed 11,102 telephones.

New Tax Guide

INTERNAL Revenue Service has compiled a complete "how to" guide on taxes and related problems confronting small business. The 127-page guide covers everything from "Starting a Business" to "Sale or Other Disposition of a Business," with such items interspersed as "What Are Business Expenses," and "How to Handle Bad Debts."

The booklet costs 30¢ and can be had from district tax collectors' office, local field offices of the Small Business Administration or Commerce Dept., or by writing to the Government Printing Office, Washington 25.

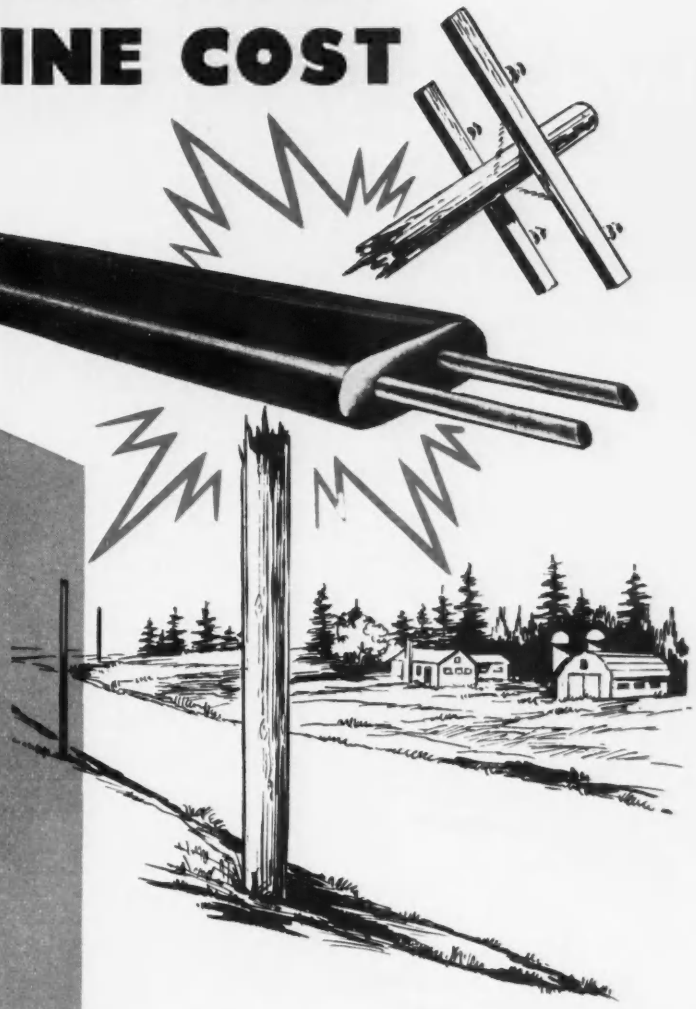
"Buy American"

LAST MONTH REA reported to its telephone borrowers — "It has come to our attention that some items of equipment and materials of foreign manufacture are being offered to borrowers without regard to the 'Buy American' provision of the Rural Electrification Act and without the required review and approval of the performance data and specifications by REA . . ."

REA than referred its borrowers to the "Buy American" requirement outlined in detail in REA Bulletin 344-3 dated July 28, 1955, and the requirement for prior approval by REA of the specifications and performance data of items of equipment and materials as outlined in REA Bulletin 345-3R1 dated April 18, 1956.

"In the case of materials and equipment of foreign manufacture," REA said, "which are acceptable from the standpoint of standards, the items cannot be included

REX ONE PAIR CUTS POLE LINE COST



A Span lengths up to 600 feet are possible with Rex One Pair Distribution Wire. Extra service poles are eliminated on long extensions and long drop runs.

B Economically installed — no cross arms, pins, or glass insulators. Wire is simply installed on tangent supports and drive hooks.

C No tree leakage — a heavy extrusion of high molecular weight, high dielectric strength polyethylene, enclosing both conductors prevents accidental grounding and eliminates excessive right of way clearance.

D Excellent transmission characteristics — similar electrical properties to R.E.A. listed Rural Distribution Wire assure good subscriber service.

E Easily transposed — no special brackets; simply twist span at installation. Cross talk and induction noise are kept to a minimum.

F Ordering data: Two conductors #12 or #14 AWG Copperweld or .083 steel. 5,000 or 15,000 foot reels.

Other REX TELEPHONE PRODUCTS

EXCHANGE AREA CABLE
R.E.A. LISTED
DIRECT BURIAL CABLE
RURAL DISTRIBUTION WIRE
R.E.A. LISTED
URBAN DISTRIBUTION WIRE
'D' INSIDE WIRING CABLES

SEND FOR TECHNICAL SPECIFICATIONS and PRICES

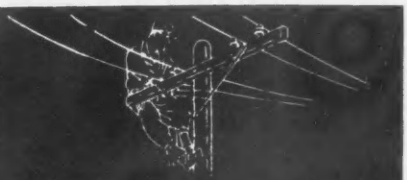
REX WIRE & CABLE

THE REX CORPORATION

INDEPENDENT

101 HAYWARD ROAD, WEST ACTON, MASS.

INDUSTRY NEWSLETTER



(Concluded from page 14)

in the 'List of Materials Acceptable For Use on Telephone Systems of REA Borrowers' since their purchase with loan funds is further subject to the 'Buy American' requirement. In such cases the sponsor is notified in writing of the acceptance, and informed that the letter may be used to inform purchasers of REA acceptance. The 'Buy American' requirement cannot be overlooked by REA, its borrowers, or suppliers of foreign products. It is encumbent upon every one to abide by this provision of the Rural Electrification Act which is included in all loan contracts and all material and construction agreements . . ."

New Owners

ACE TEL. ASSOC., Houston, Minn., purchased Farmers & Merchants Tel. Co., Lanesboro, Minn. . . . Junction City, (Kans.) Tel. Co., completed a purchase agreement for acquisition of Riley Rural Tel. Exchange . . . Ararat (Va.) Tel. Co., formerly owned by late Dr. A. M. Gates, has been taken over by Lee Tel. Co., Martinsville, Va. . . . Community Tel. Co., Leipsic, Ohio, received approval from Ohio Commission to acquire all plant, property and business assets of Mt. Cory Mutual Tel. Co., for a cash consideration of $4000.00. Transaction involved approximately 150 stations.

Expansions & Improvements

HAROLD STOUFFER, owner of The Diamond (Mo.) Tel. Co., announced plans for converting the Diamond exchange to dial. Mr. Stouffer said the new installation will cost nearly $70,000.00 . . . California Water & Tel. Co., Monrovia, announced plans for a $215,000 office building adjoining the present commercial office structure . . . Shareholders of the Farmers' Mutual Tel. Co., Rudd, Ia., have approved conversion to the dial system at its four exchanges in Nora Springs, Rockford, Floyd and Rudd . . . 2,000th telephone of Yadkin Valley Tel. Membership Corp., Yadkinville, N. C., was installed recently. Corporation serves Davie, Iredell and Yadkin counties through five modern dial exchanges. Basic plant has facilities for 3,000 customers, according to mgr. A. William McDonald.

R. M. Judy, manager, Sanborn (S.D.) Tel. Co-op. has announced bids will be let for work on a new dial system to be installed at Artesian, Fedora and Roswell. Construction will start next summer. Sanborn Tel. has received approval of a $269,000 loan from REA to purchase the telephone systems in the three areas and to provide service to 206 farm families not now being served . . . More than 40 million dollars was spent last year on new and improved facilities, Chesapeake & Potomac Tel. Co., of Virginia reported last month. Vice-Pres., J. Rhodes Mitchell said the expenditure brought C&P's plant investment to 261 million dollars. He said 65,000 telephones were added, bringing total number to 845,000; employment was raised from 9,400 to 10,125 . . . Tidewater Tel. Co., announced plans for establishing a separate exchange for Port Royal, (Va.). Port Royal is now served through the company's Bowling Green exchange.

Installation of new dial telephones in Cassville, Mo., was completed last month, according to John A. Holden, pres. of the Cassville Rural Tel. Co. . . . North Star Tel. Co., completed dial cutover at Butterfield, Minn. J. F. Eitzen, general manager of the company, stated the expansion program for the Butterfield area cost between $35,000 and $40,000.

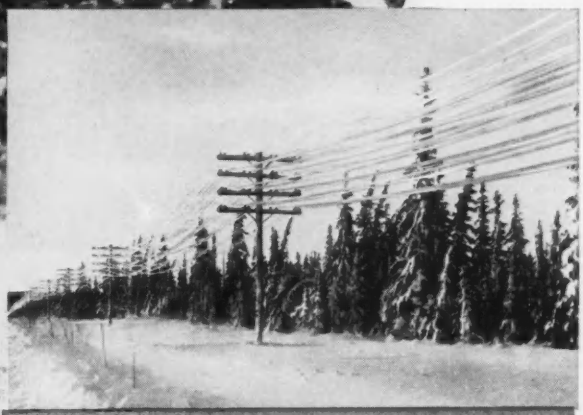
Highlights

GEORGE WEAVER has been named wire chief of Morrison (Ill.) Tel. Co., to fill vacancy caused by the death of Frank West . . . Kenneth James has been re-elected president of the Stanley (Ia.) Cooperative Tel. Co. Alfred Menzel was re-elected treasurer and Carl Mahoney, secretary . . . Articles of incorporation for Middle Branch Rural Tel. Co., Inc., Grafton, N. D., have been filed. The non-profit concern proposes to build 7½ miles of line at estimated cost of $3,500 in Walsh County. Its trustees include Melvin Lykken, Clinton Rutherford and Gust Monson, all of Grafton . . . Plains Co-op Tel. Assoc. has employed Dave Ellis of Goodland, Kans. as manager and set up an office at Joes, Colo. . . . Baxter Case of Western Reserve Tel. Co., Hudson, Ohio and West Richfield Tel. Co., is now acting manager of Chardon Tel. Co., replacing Yetter Snyder who has a serious illness. Mr. Case is the brother of Weldon Case now manager of Elyria Tel. Co.

New Book

"RECRUITING AND SELECTING OFFICE EMPLOYES," by Milton M. Mandell; AMA Research Report No. 27; 175 pages; price, $4.75; order from American Management Association, 1515 Broadway, Times Square, (Dept. TE&M), New York 36, N. Y. AMA has surveyed 320 companies of every size to get useful information about job evaluation, recruitment, problems and pitfalls in selection, devices, recruiting and selecting special groups, and the selection of supervisors and managers.

Whopping ice load again proves Copperweld's stamina



Alaska sleet storm brings record 14 inches of ice on wires!

Copperweld* Line Wire has proved its ability time and again to take the terrific punishment of rough Arctic weather on the 2,000 miles of pole line built along the Alcan Highway in 1943.

During a recent sleet storm—believed to be the worst in Alaska's history—from 2″ to 14″ of ice and snow formed on the wires. But the Copperweld Wires did not break, even with this all-time record ice load. Certainly, this is strong evidence that the permanent high strength of Copperweld Line Wire means unfailing service and less upkeep—whatever the weather.

Remember, in Copperweld, the copper is inseparably molten-welded to the steel core. Its performance has been proved in over 40 years of service. Engineering data furnished on request.

*Trade Mark

Copperweld TRADE MARK
COPPER MOLTEN-WELDED TO STEEL
Line Wire

Proved in Service FOR OVER 40 YEARS

SOLD BY LEADING DISTRIBUTORS

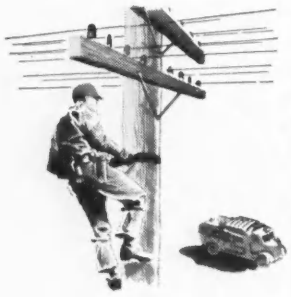
COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION *Glassport, Pa.*
For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

The world of science behind
EXIDE-MANCHEX BATTERIES

Being interviewed is R. R. Jardine, Supervisor of Development Engineering

"Open windows let electrolyte in—power out"

At the Exide Laboratories—**Reporter:** You mean there's an important connection between the electrolyte and the battery power?



Jardine: Yes indeed. You see how I'm running these strings through the "windows" in the Exide-Manchex positive plate? These openings give the electrolyte free access deep into the interior of the plate.

Reporter: How does that affect battery performance?

Jardine: It means there's no time lag—no slow filtering of the electrolyte to reach the active material. There's a continuous contact between the electrolyte and the entire plate. So the power is there when it's called for.

Reporter: Do other batteries have this free access of electrolyte to the active material?

Jardine: No they don't. Because only the Exide-Manchex has the positive plate with the spiral lead buttons locked into a cast alloy grid.

Reporter: Obviously this is an important feature of the Exide-Manchex Battery.

Jardine: Yes it is, but it's just one of many engineering details that contribute to their long life and high capacity.

Note to battery users: When you order batteries for float or cycle service in stationary applications, be sure to specify Exide-Manchex. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Co., Philadelphia 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY **Exide®**

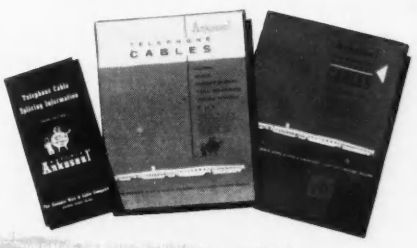
Get The Cable You Want When You Want It From The Big, New Ansonia Plant

ANSONIA® **Ankoseal**

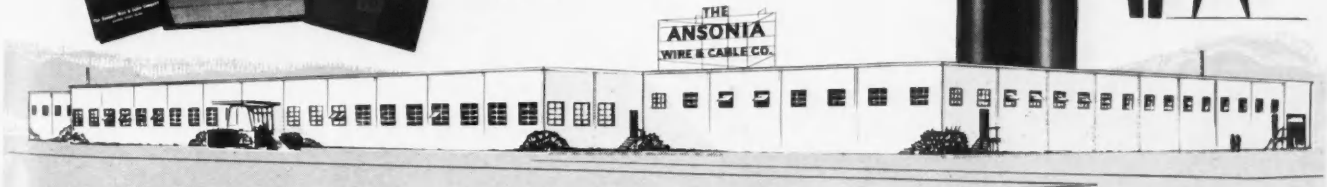
Ansonia Ankoseal Cables, produced in the most modern plant in the industry devoted entirely to plastic cables, are offering the finest transmission characteristics ever provided in plastic telephone cables.

Get the full advantages of the most experienced maker of plastic telephone cables... get Ankoseal Cables.

Ask for the latest Ankoseal literature including a new pocket size splicing booklet.



Sold Through Recognized Telephone Distributors



THE ANSONIA WIRE & CABLE COMPANY · ASHTON · R. I.

The Oldest Name In Plastic Telephone Cables In The Most Modern Plant Devoted Entirely To Producing Plastic Cables

WASHINGTON NEWSLETTER

Battle Shaping Up

AS EXPECTED, the principal controversy in the upcoming hearings of the Federal Communications Commission to determine who will be permitted to use frequencies above 890 megacycles shapes up as a battle between the common carrier communications industry and proponents of unlimited or liberalized use of private point-to-point microwave systems.

The microwave hearings, scheduled to start as soon as practicable after April 1, are attracting much more attention than normally found when the FCC or any government agency announces plans to inquire into a problem. The response to the call for interest in the hearings as to who should use these frequencies, and to what etxent, has come from virtually all corners, with the total number of participants exceeding 150 associations, equipment manufacturers, communications common carriers, broadcasting networks and individual radio and television stations, and other present or potential microwave users.

In addition to the controversy between the common carrier communications industry and those seeking unlimited or liberalized use of the private point-to-point systems, other major areas of dispute — as indicated by the notices of appearances filed with the FCC — include the question of whether the land mobile radio services will get a frequency allocation in the 900 mc region, and whether common carriers will be ordered to interconnect their facilities with private microwave systems.

Among those filing, the U.S. Independent Telephone Association noted that it will present evidence on the "acute and unsatisfied needs of Independent telephone companies for exclusive frequencies that would permit multichannel, point-to-point operations on frequencies below 1000 mc and reasons why the 890-940 mc band, now used by common carriers on a secondary basis, presents the most feasible solution for meeting indicated public service demands of Independent telephone companies," as well as the need for other frequencies above 890 mc.

Also to be developed by USITA will be "the intolerable conditions which would result if private point-to-point systems were assigned frequencies without limitations and the reasons why common carrier frequency requirements on an exclusive, interference-free basis should be satisfied before private requirements."

In addition, the association said in its filing, it will discuss "the economic detriment which common carriers (would) suffer due to inadequate allocations and the installations of private point-to-point systems; the impact of this economic injury on the general public; and the manner in which sharing of private point-to-point systems accelerates this economic detriment, particularly where a common carrier can furnish the desired facilities and service at rates approved by regulatory authorities."

The American Telephone & Telegraph Co., on behalf of the Bell System companies, said its witnesses will discuss "present and anticipated use of radio above 890 mc," the development of radio for common carrier communication service "in the past decade, for telephone, television, and other services," and the "anticipated growth in requirements in the foreseeable future," touching on not only point-to-point communications, but also mobile systems on "land, sea, and air." The "air" category will include recommendations for public air-ground radiotelephone service, the telephone company has pointed out.

AT&T explained that it plans to present evidence on the "necessity for consideration of frequencies in the establishment of point-to-point systems," citing "congestion, particularly in terminal areas"; the "efficiency of common carrier methods of operation in utilization of frequencies"; and "need for continued limitations on private systems."

Discussing the "economic effect on users of common carrier services of the unrestricted licensing of private systems," the telephone company said it will cite: "(1) diversion of business with higher costs to remaining users; (2) effect on uniform rate structure; (3) increased effects on items 1 and 2 . . . of sharing between private systems; and (4) necessity for continued consideration of availability of common carrier facilities in authorizing private microwave facilities." AT&T also declared that it would be "impracticable to establish engineering standards suitable for all types of microwave services."

Another participant in the hearing will be the Lenkurt Electric Co., whose position will be that of a supplier of microwave facilities for the common carrier tele-

Please turn to page 22

3 Legs Make Twice the Derrick

With Holan's three-legged derrick, you are ready for any job at a moment's notice... butt-pulling... body-loading... extra-heavy lifts.

The integral third leg means crews won't have to sit idle while a separate third leg is being attached And the integral third leg gives extra strength to provide a wider and safer working range.

This derrick was designed to do more than it has to. It lifts loads up to 12,000 pounds, poles 75 feet long . . and has been load-tested at 22,000 pounds. For body loading, it hoists up to 5,000 pounds of equipment over the rear axle. Working range is 195° — the derrick head lowering to within five feet of the ground. Two levers at the rear of the truck body hydraulically control the derrick and live boom.

There's nothing else in the field like Holan's Series 3700 Live-boom Power Derrick.

Write for the Series 3700 catalog.

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THE NAME THAT MEANS WORK SIMPLIFICATION

Line construction bodies for light to heavy-duty. Crew compartments optional. Efficient tool compartments and drawers.

Bodies for truck driven air compressors. Designed to accommodate hose reels, tapping machines, jack hammers, etc.

Service bodies for chassis up to 1½ ton. Lengths, 72", 75", 84", 90" and 102".

Hydraulic Derricks designed for front or rear mounting. Capacities to 12,000 lbs.

Light-duty power operated derricks for front or rear mounting. Operating range of 146°.

Ladders to 40' with all phases completely hydraulic. Pump actuated by P.T.O. or separate engine drive with electric starter.

Mechanical Ladders expertly engineered and counterbalanced for effortless handling. Maximum heights from 23' to 40'. Swings 360°; angles to 72°.

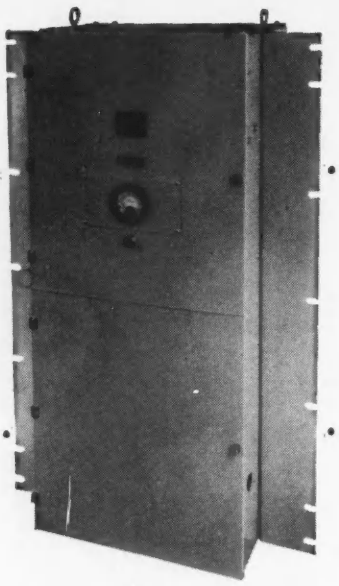
Portable hydraulic and mechanical earth borers. Augers for 8" to 20" diameters, depth to 8'.

Wide variety of pole and reel trailers. Standard and special. Many optional features.

Hydraulic jacks, controlled from rear of truck. Rigid mounted or patented Holan self-stowing types.

Hydraulic towers with rotary, stationary, or transverse platforms. Exclusive box-girder telescoping mast.

NEW



RAYTHEON 48 VOLT BATTERY CHARGERS
with these
3 IMPORTANT ADVANTAGES

1. ***Magnetic amplifier control*** **of both input and output with no-load to full-load stabilization. No tubes.**
2. ***No audible hum*** **at output terminals—Improved filtering of output circuit. Automatic compensation for rectifier aging.**
3. ***The most compact unit*** **on the market—Completely re-designed cabinet, for wall or rack mounting.**

RECTICHARGERS® NOW AVAILABLE for immediate delivery from stock. 6, 12 ampere (single-phase); 25, 50 ampere (3-phase)—48 volts. In stock by January 1957 —3, 25 ampere (single-phase); 100 ampere (3-phase); 6, 12, 24 ampere constant current models. *See your telephone supplier.*

Free! **A new folder describing the 48 volt line. Diagrams, specifications, other information you can use.**

MAIL THIS COUPON NOW

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Commercial Equipment Division,
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Please send me 48 Volt Recticharger bulletin No. 4-300 —without charge or obligation.

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Washington

(Concluded from page 20)

phone industry and it told the FCC its presentation "will be limited to the needs of the common carriers." One point of emphasis will be stated advantages of 900 mc circuits over circuits derived from facilities in the 6000 mc band, and the need for a "primary allocation of frequencies below 1000 mc" to "permit the installation of already-planned systems and to permit amortization of present investments."

Lenkurt stated that "In most industrial areas, assignment of frequencies for private point-to-point systems without limitations would create problems of harmful interference with respect to transmitter sites and terminal locations . . . Common carriers must provide facilities to meet peak requirements of the public. Utilization of such facilities has a material effect on the rates common carriers charge for their services to provide a reasonable return. The licensing of private systems without limitation would not be in the public interest. Regulation of common carriers is predicated upon some limitations on the licensing of private communication systems."

"In Case of Attack"

AS PART of the program to assure continuity of essential production in event of an enemy attack or other emergency, the Communications Division of the Business & Defense Services Administration, Department of Commerce, is surveying a large part of the Independent telephone industry to determine steps being taken to provide required communications service to plants on the government's critical industrial facilities list (CIFL).

Large companies in the Independent field are being invited to send representatives to Washington to confer with government officials in regard to the program. Many of the small Independents are being surveyed by means of a questionnaire.

REA Reports

THE RURAL Electrification Administration reports that by the end of 1956 it had made 509 telephone loan allocations, 203 to cooperatives and 306 to commercial companies. During the past year, REA made 212 telephone loans for a total of $82,181,000, to serve an estimated $188,000 subscribers.

Total loan allocations since the start of the REA telephone loan program to the close of last year amounted to $351,500,000, while cash equity put up by borrowers was $15,811,000. By purpose, the loan allocations consisted of $180,610,000 for new construction, $151,621,000 for improvements, $11,049,000 for refinancing, $17,171,000 for acquisitions, $5,840,000 for operations, and slightly more than $1,000,000 for other purposes.

This extra convenience for your subscribers means extra revenue for you

HANDS FREE TELEPHONE

This extra-revenue instrument has won widespread acceptance among businessmen, housewives and others who want two-way conversation even when their hands are busy.

When you offer your subscribers the Stromberg-Carlson *Hands-Free* Telephone, you're on a fast-rolling bandwagon to increased income for your company.

Our *Hands-Free* phone incorporates improvements that make it superior in every way. Its efficient operation, minimum service requirements and handsome appearance assure greater subscriber satisfaction.

Your nearest Stromberg-Carlson sales office will be delighted to supply you with one or two demonstration instruments and hard-hitting sales literature.

STROMBERG-CARLSON COMPANY

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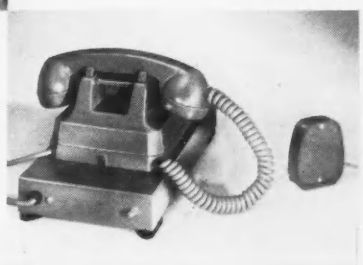
XY

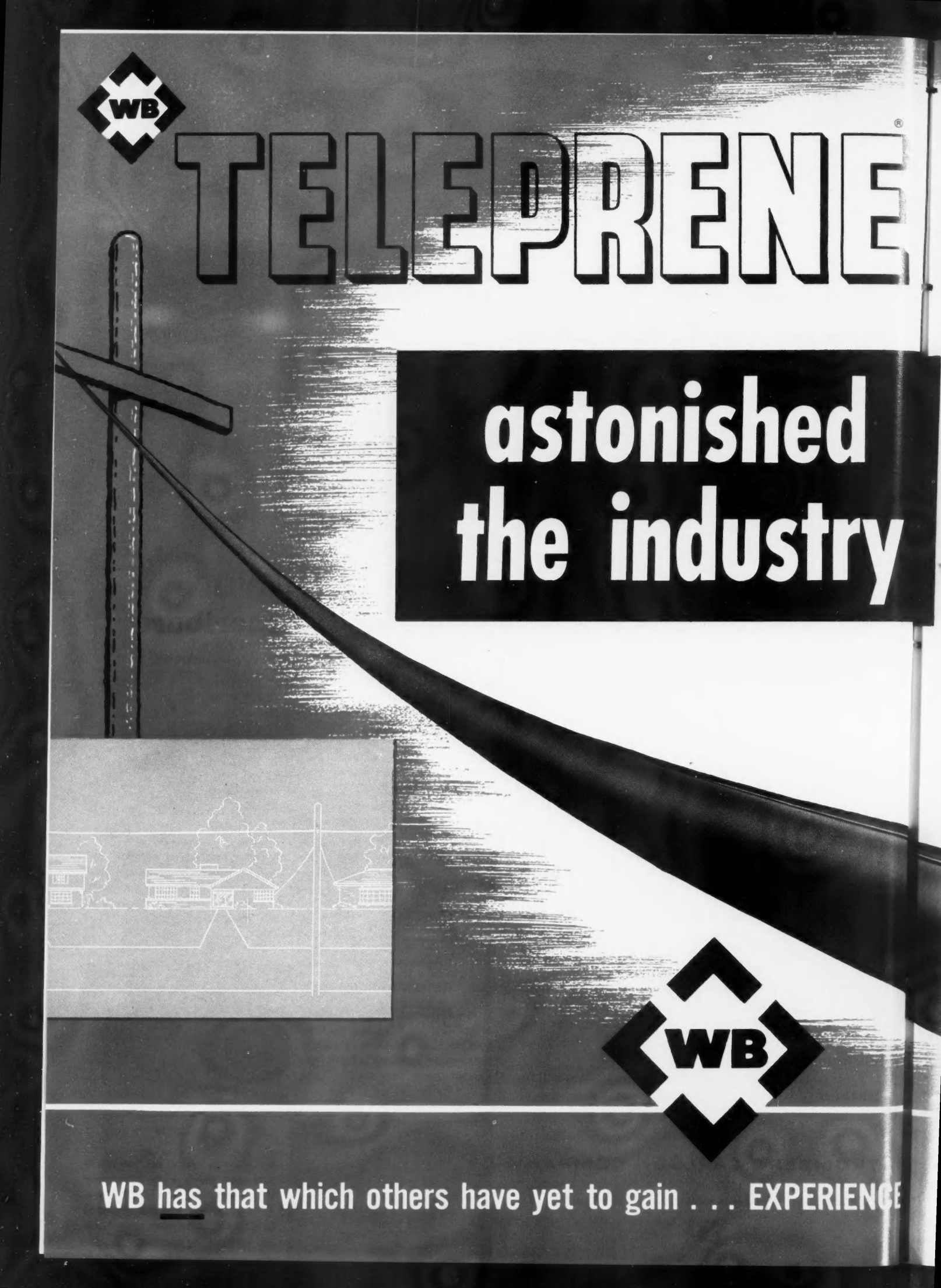
1. Installation of this two-piece instrument takes only 14¾ minutes. You need only connect the line cord, plug in to a 110-volt AC outlet and attach the mike cord. (Some designs take 3 to 4 hours to install.)

2. The microphone is separate, not built into a heavy, cumbersome instrument. It can be set in any convenient place, has a 12′ cord; is non-directional: it works from front, side, rear.



3. This instrument has AVC (Automatic Volume Control). If the user talks too close to the microphone, automatic compensation prevents sudden, unpleasant "boom."

4. Simply by lifting the handset, a subscriber can use the Stromberg-Carlson Hands-Free phone as a conventional instrument. It is easily switched back and forth between conventional and loudspeaking operation.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TELEPRENE®
astonished
the industry
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WB has that which others have yet to gain . . . EXPERIENCE

drop wire...

After more than ten years in test installations WB TELEPRENE Drop Wire shows no appreciable deterioration . . . it is still providing good-as-new service. Before WB introduced neoprene jacketed TELEPRENE the *average* life of drop wire was only seven years . . . up to now no "average" has been established for TELEPRENE.

Independent Telephone Companies have saved hundreds of thousands of dollars by using extra-long-lasting neoprene jacketed TELEPRENE . . . consequently they now expect comparable high quality from *all* WB telephone wires . . . AND THEY GET IT!

INDEPENDENT

Well Built Wires Since 1899

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WHITNEY BLAKE COMPANY

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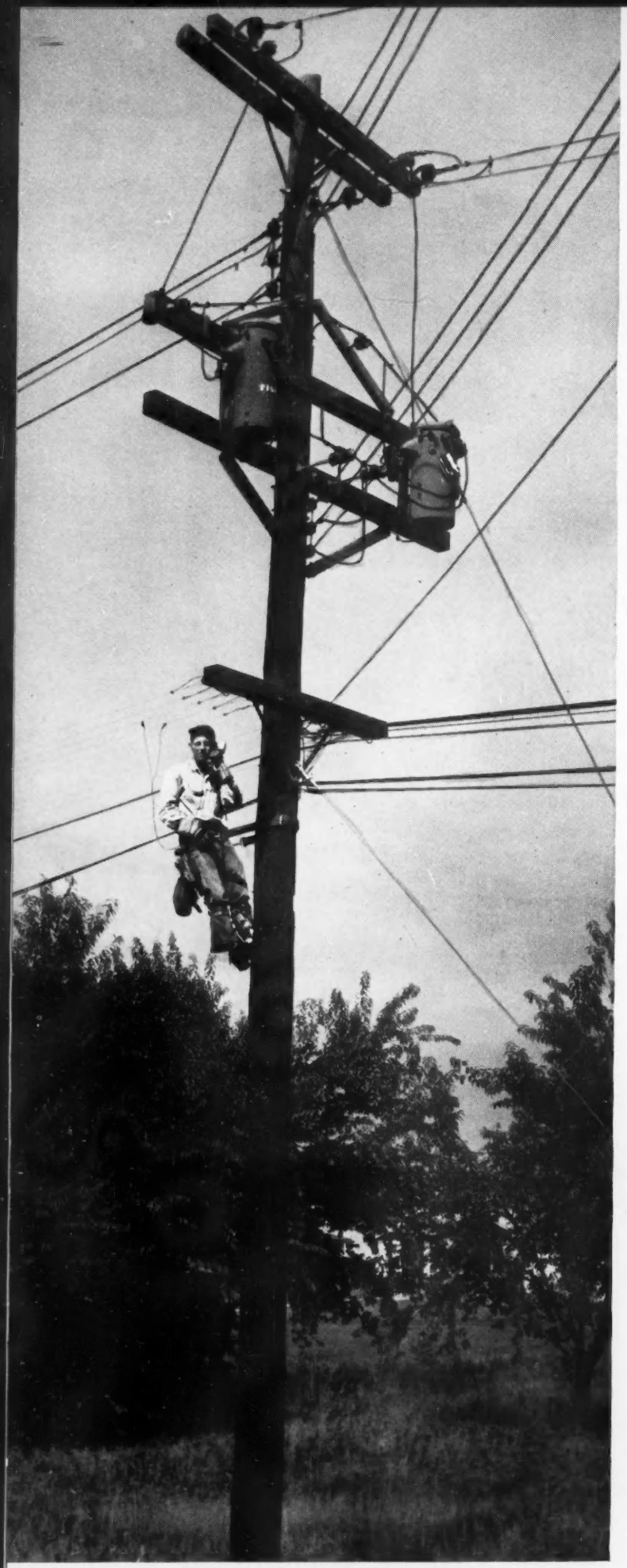
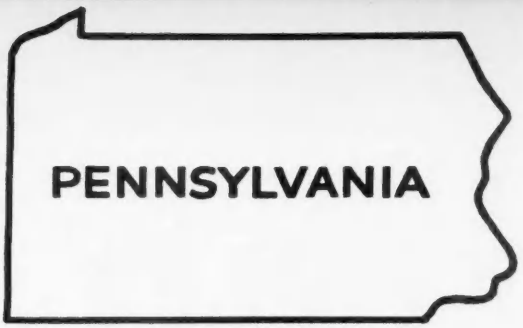




Polyethylene jacketing and insulation

Cuts installation costs

The extremely light weight of polyethylene insulation results in telephone cable that is easier to handle. In rural areas of western Pennsylvania, this has meant faster installation, effecting such economies that polyethylene-covered cable will be a major item in purchases for the coming year. In addition, pole spans can be wider, with consequent savings in maintenance.

Polyethylene is also considered an outstanding material in terms of service life and safety. It has shown unusual resistance to weathering and abrasion. It has passed exhaustive indoor and outdoor tests in this section, where it is used extensively on rural distribution wire.

BAKELITE Brand Polyethylene and Vinyl Plastics have proven their outstanding dependability as wire covering in a wide variety of applications. They are now used extensively on signal control cable, utility line wire and service drop, in power cables and coaxial cables. These materials meet REA requirements for plastic-covered telephone wire. Also, IMSA specifications for fire alarm and signal control cable; ASA standards for weatherproof wire; and ASTM D1238-52T Type II, dielectric materials. As a result, a record of successful experience is continually being accumulated, under operating conditions that parallel many of those in the telephone industry.

Developments in the use of BAKELITE Polyethylene and BAKELITE Vinyl Plastics are reported regularly in Bakelite Company technical publications, available without cost. To keep informed, write Dept. WG-183. For technical guidance in the use of these plastics, include an outline of your problem.

BAKELITE BRAND PLASTICS

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

In Canada: Bakelite Company, Division of Union Carbide Canada, Limited, Belleville, Ontario

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

FREE LITERATURE

This feature of "Telephone Engineer and Management" helps you get up-to-date technical bulletins, catalogs and literature. To obtain your copies write Reader's Service Department, 7720 N. Sheridan Rd., Chicago 26, Ill.

Bill Preparation

WITH THE UTILIZATION of Remington Rand Punched-Card Records Services, the time required for bill preparation dropped from two weeks to three days at the Central Virginia Telephone Corporation. The operation of this service is outlined in a new two-color brochure (TM 1084) recently published by Remington Rand.

Once a month the telephone company supplies a list of new users and disconnects, the toll tickets and miscellaneous charges. The Punched-Card Service does the rest — preparing the bills and a revenue distribution summary, from the billing cards which are then used as the accounts receivable ledger.

Batteries

EXIDE INDUSTRIAL Division of The Electric Storage Battery Co., has published a catalog (5928) describing its new type EWA battery for telephone service.

The catalog highlights the development of the battery's positive plates, constructed of a blend of lead, antimony and Silvium, Exide's patented alloy of lead, silver and other metals.

The four-page catalog also features the battery's lightweight, heat resistant, shock absorbent polystyrene jar. Battery elements are suspended from ledges molded within the container walls.

One, two and three-cell EWA units are illustrated, and the catalog contains a table showing their rated capacities, dimensions, weights and other data. A full-page cutaway photograph shows details of the cell construction.

Earth Boring Machines

HYDRAUGER CORP., LTD., manufacturer of horizontal earth boring machines, has prepared a new 16-page illustrated booklet presenting the complete new Hydrauger line of machines and interesting field operation photos. Views showing embankment drainage and pipe line installation are included.

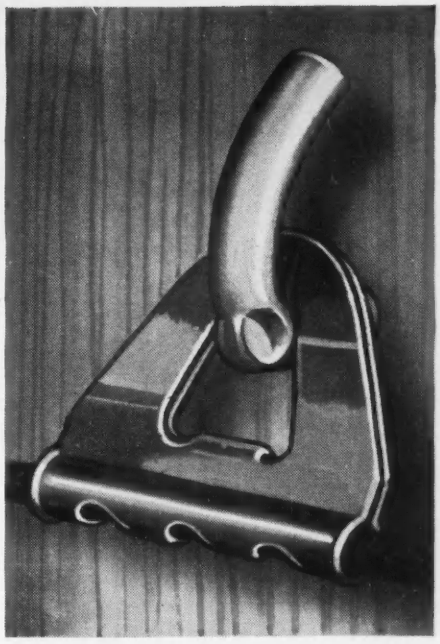
"Tape It Easy"

TECHNIQUES for protecting underground pipe from corrosion with "Scotchrap" brand pipe insulation tape is the subject of a new how-to-do-it booklet announced by Minnesota Mining & Manufacturing Co., Dept. D6-262, 900 Fauquier St., St. Paul, Minn.

Called "Tape It Easy," the 24-page booklet provides step-by-step photographs and instructions for wrapping bends, elbows and short sections, patching pipe with tape, preparing joint surfaces for wrapping, wrapping welded joints and taping straight pipe sections as well as street "T" fixtures and other typical fittings.

An additional section contains a "summary of helpful suggestions" for making pipe protection with tape easy.

A coverage table on the book's back cover lists recommended tape width for various pipe sizes, outlining the minimum recommended tape overlap and the number of squares of tape needed per 100-feet of pipe using various overlaps.



Speed the job . . . Secure long line drops with

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DROP WIRE CLIPS

Wherever intermediate fastenings are needed on straight line drops, these convenient clips can be installed in a matter of minutes. No special tools are necessary. Simply slip the clip onto the wire and crimp it tight with pliers. It will hold firm permanently . . . without damage to the wire or insulation. KEARNEY Drop Wire Clips can be used with either parallel or twisted pair drop wire.

For Better Construction . . . Safer Maintenance

Specify 269

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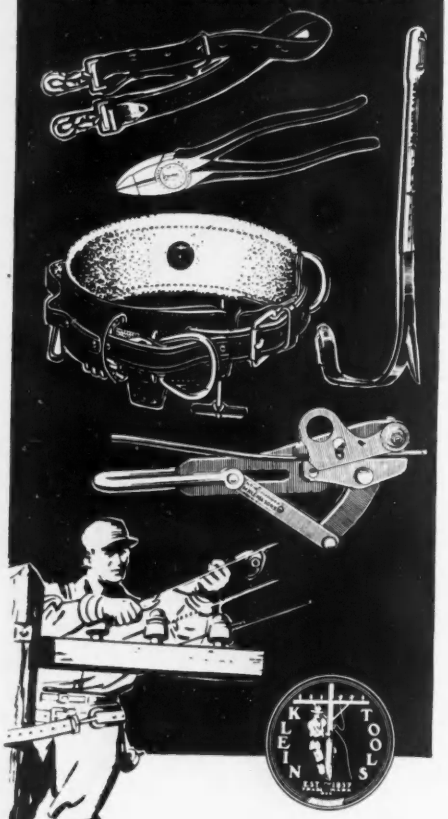
KLEIN

FOR GREATER SAFETY, BETTER PERFORMANCE



Klein was supplying quality tools and equipment to linemen and electricians when the industry was in its infancy.

Today, as when the first wires were strung, Klein leads in producing tools and equipment for the electrical industry.

The third and fourth generations of Kleins are still adhering to the quality standards set a century ago. The new Klein plant, equipped with the latest in manufacturing facilities, assures better, safer equipment, wherever power lines or communication lines are strung.

100 years of service to linemen, electricians and industry is back of this new Pocket Tool Guide No. 100. A copy will be sent to you on request, without obligation.

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SAFETY CORNER

Safe Motor Vehicle Operation

MOTOR vehicle accidents, both on and off the job, still continue to occur at a high rate. A recent review of one telephone company's on the job motor vehicle accidents indicates that many of the company's drivers are not driving defensively.

An analysis of this company's motor vehicle accidents indicates the following:

(1) 49% of the accidents involved drivers with less than two years' service.

(2) The outstanding types of accidents were: (A) 34% — Backing; (B) 15% — Rear end collision; (C) 13% — Passing; (D) 9% — Pulling away from curb; (E) 9% — At intersections; (F) 6% — Turning; and (G) 77% occurred while traveling between zero and 10 miles per hour.

After carefully analyzing its motor vehicle accidents, the company issued the following "Tips For Defensive Driving" which we are passing along to you in the hope they will be put to good use:

(*A*) *Backing Accidents.* Responsibility for backing safely is entirely the driver's. He looks through the rear and side view mirrors, turns his head to look and, when necessary, gets out to make sure the way is clear before backing. He backs slowly. He is alert for any change in conditions. He avoids backing whenever possible. When he has a passenger riding with him he asks that person to guide him during the backing operation. He considers parking his vehicle in locations where it will not be necessary to back.

(B) *Intersection Accidents.* The defensive driver avoids these by observing carefully and by approaching, entering, and crossing intersections slowly and cautiously. He does not depend solely on lights or signs but protects himself by being prepared to avoid violators. When turning at intersections, he gets into proper position, signals properly, and turns slowly, only when it can be done safely. A defensive driver never passes another moving vehicle at an intersection.

(C) *Pedestrian Accidents.* There is always a responsibility to yield right-of-way to pedestrians. Defensive drivers refrain from startling and confusing pedestrians. They are watchful for jay walkers and they are particularly careful to be alert for children.

(D) *Rear End Collisions.* There is seldom any excuse for running into the rear of the vehicle ahead. A defensive driver follows at a safe distance. He is not distracted while driving. He anticipates the need to stop his own vehicle and stops gradually, not suddenly.

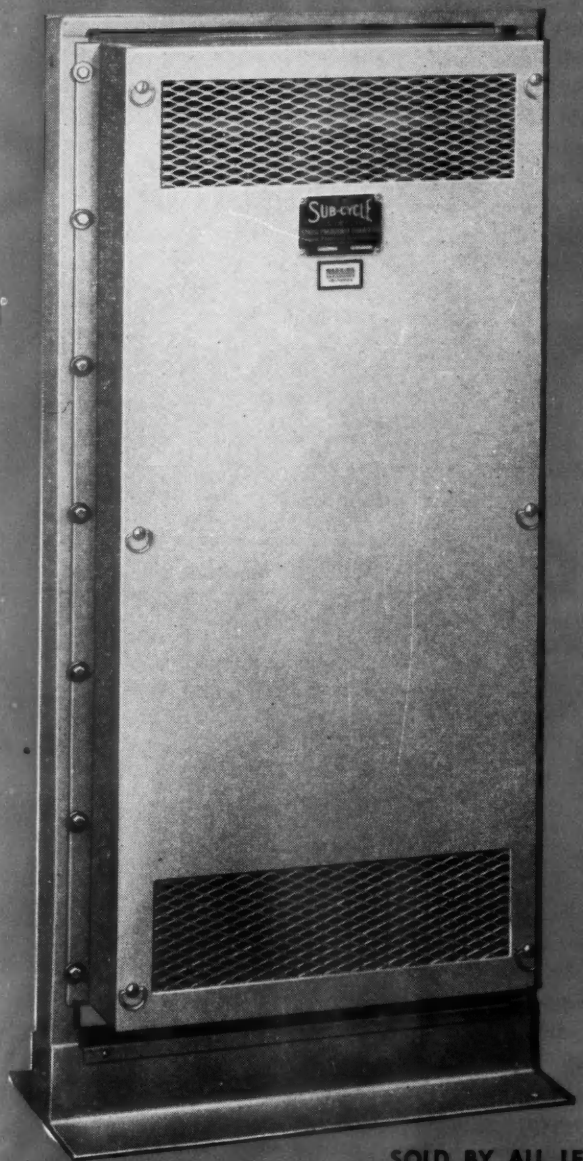
(E) *Trespassing on the Rights of Others.* Accidents resulting from weaving, cutting-off, squeeze plays, etc. have no place in the driving habits of defensive drivers. The defensive driver stays in a straight line to the right except when passing. He is careful in changing lanes and in pulling around temporary obstructions. He observes and signals carefully when moving out from the curb. He comes to a full stop at all stop signs.

—To be continued in the March 1 issue.

another **FIRST** by Lorain!

THE S-5 SUB-CYCLE

FOR SYNCHROMONIC RINGING!



PERMANENT

Dependable

OPERATION!

YEAR AFTER YEAR

Making use of a unique conversion principle combined with basic Sub-Cycle circuits used repeatedly in other Lorain equipment, the S-5 Sub-Cycle has power to spare. Depend upon it to deliver full-rated capacity even under the most gruelling conditions. It has excellent voltage regulation, and will always deliver the exact synchromonic ringing frequencies. The S-5 has no moving parts; therefore, it provides the permanent, maintenance-free, economical operation that is characteristic of all Sub-Cycles.

The Model S-5 can be equipped to supply either 15 cycles or 20 cycles as the fifth frequency; if only four frequencies are required, the converter is designated as a Model S-4. A minimum of floor space, only 24-3/8" by 15", is required.

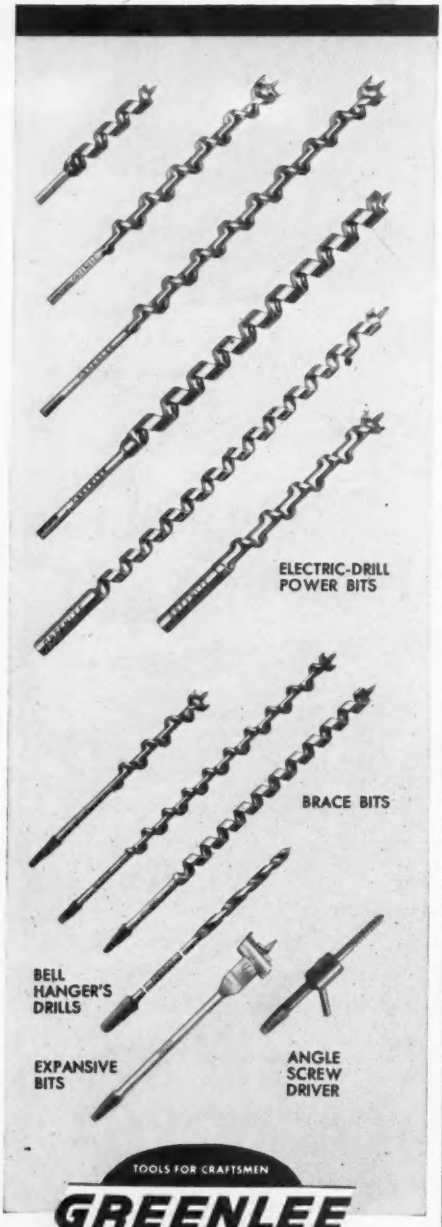
WRITE FOR BULLETIN 169

SOLD BY ALL LEADING TELEPHONE DISTRIBUTORS

LORAIN PRODUCTS CORPORATION · LORAIN, OHIO

FLOTROL
PARTNERS IN DEPENDABILITY
SUB-CYCLE

high-quality, long-lived
BORING TOOLS
for pole, crossarm, and timber work . . .



TOOLS FOR CRAFTSMEN
GREENLEE

Whether you need to bore deep or shallow holes, small or large, there is a GREENLEE bit, drill, or auger for the job! Various lengths and styles for electric drill or hand-brace use. All of highest quality materials and correct design for easy boring, clean cutting, and long life under hard usage. Stocked by leading telephone supply distributors . . . see yours or write direct for literature.

Greenlee Tool Co., 2002 Columbia Ave., Rockford, Ill.

REVENUE BOOSTERS

Plant Man Offers Sales Tips

"WHEN customers ask the price of a colored telephone set, I tell them the cost will be two dollars a month for four and a half months. That usually clinches the sale."

That is the way Bob Hicks, Denver North Plant Installer-Repairman, of Mt. States Tel., in part explains his success in selling colored telephone sets and extensions. Using this easy approach, Bob sold 38 colored sets during November, 1956 — (most of them on new installations) and four extensions. Those sales alone amount to almost $325 in annual revenue.

Besides making the price attractive to customers by breaking it down into small monthly sums, Bob has some other merchandising ideas. He makes a point of carrying plenty of colored sets with him in the truck and taking some of them into the homes he visits. Usually the customer takes over from there. By asking questions and trying colored sets in various locations in the home, they usually sell themselves.

Many installer-repairmen are passing up sales every day because they feel they're not "born" salesmen. Actually, there is no such animal. Successful salesmen can be short or tall, talkative or retiring, fat or otherwise. However, they all have some things in common. They are continually looking for sales oportunities, having a good knowledge of what they're selling, and are willing to answer customer's questions.

Most installer-repairmen have those qualities, but some have been a little reluctant to try their hand at sales. If you are one of those who have hesitated, why not borrow a couple tips from Bob Hicks and launch your own sales campaign today? Chances are, you'll be surprised to find that you, too, are a salesman.

That, incidentally, is good advice for every telephone employe, since all employes have opportunities to talk "complete telephone service" to friends and neighbors. Many persons have not heard about Illuminated Dial telephones, Volume Control sets for those with impaired hearing, Speakerphones for business and residence installations, and other telephone items and services. Also, you'll be surprised to find how many will be pleased to know more about telephone extensions in color for their own homes and as gifts for special occasions.—*Mt. States Tel. Co.*

New Procedure

SEVERAL revisions have recently been made in long distance calling. Operators no longer identify the name of the city from which the call originates. They will simply say, "This is long distance, calling" or "Mr. Smith, please, long distance is calling."

These and other changes are intended to make long distance calling easier and more pleasing for callers and simpler for operators.

Proven Leadership*

*IN 1956 . . . MORE UTILITIES BOUGHT

POWERS American

SERVICE BODIES

THAN ANY OTHER MAKE

HERE'S WHY! Powers-American builds *fine* service bodies . . . and *builds them to last.*

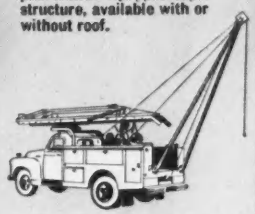
Powers-American can furnish the *just right* body for any service job—standardized for greatest economy . . . modified-standard, to fit individual job needs . . . custom-made, to meet specific operating requirements.

Whether you have one truck or the largest fleet . . . you'll find it worthwhile to get details from Powers-American next time you need service bodies for your operation.

SERIES 350 Bodies have an under-floor winch, a fold-over derrick, and an extension ladder. Compartments are equipped to carry a variety of service tools, parts, and materials.

SERIES 25 Bodies are available in standard models equipped specifically for telephone, electric, gas, or water meter installation and service.

SERIES 44L Bodies have same construction features as Series 44 Bodies described above . . . plus a shelf-equipped superstructure, available with or without roof.



SERIES 450 Bodies, designed for light duty construction and maintenance work, are equipped with a revolving aerial ladder, an underfloor winch, and an easy-to-use derrick.

SERIES 44 Bodies . . . in 75", 90", and 104" lengths . . . are designed for service work in any phase of the utility industry. Equipped with bins, racks, material hooks, and adjustable shelves. Available with optional items to fit individual work needs.

UTILITIES EXPECT MORE FROM POWERS American

Descriptive literature and price information is yours for the asking

McCABE-POWERS

AUTO BODY COMPANY

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"Awk, I've got to admit that
The World Champion Repeater is....

THE KELLOGG 'TYPE Z

Only the Kellogg Repeater has so many features:

- Low operating cost
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- Reduces transmission losses up to 85%
- "Built-in" equalization
- Flat circuit response over entire voice band
- Variable controls make rapid set-up practical
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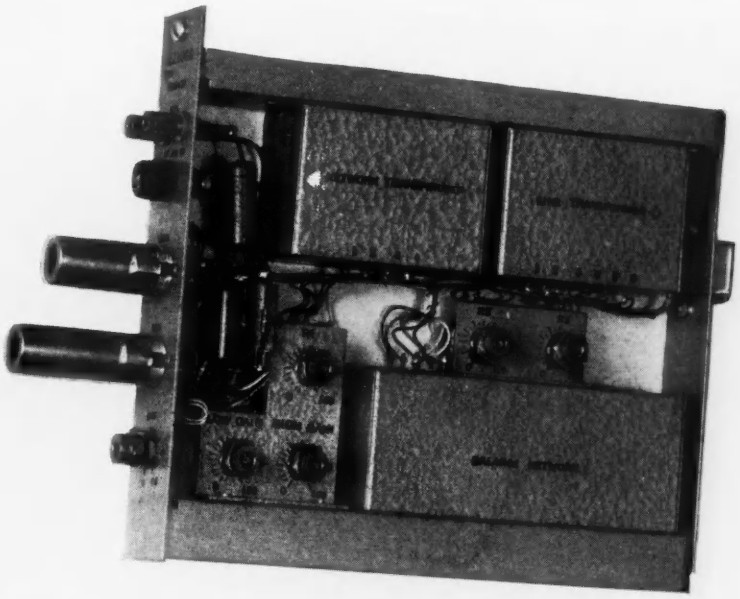
- Universal application

"V.F. REPEATER"



Z-11 voice frequency repeater

Z-21 voice frequency repeater

Get the full story on the World Champion Repeater. Write today for your technical bulletin on the new Kellogg Voice Frequency Repeater.

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[illegible]mboldt 7285

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From any Angle....

the NORTH Ericofon

is the ultimate in convenience!

The dial in the base represents a new concept in design—bringing the **dial to you!** No longer need you stretch, twist, or strain to dial! This combination of ultra-convenience, extremely light weight, and beauty is available for your subscribers only in the Ericofon.

.... and the Ericofon is available only from NORTH

NORTH ELECTRIC COMPANY

655 SOUTH MARKET STREET • GALION, OHIO

Usually out in the field, Manager Bert Kelley is here seen dictating correspondence to his secretary, Mrs. Darlene Pearson. Mr. Kelley has been doing business with Graybar for over 40 years. Under his able management, Farmers Mutual has become one of the leading independents in Iowa. Nationwide operator dialing came to Clarinda in 1951, exchange dialing in December, 1954.

"We like the personal service rendered by Graybar"

The Farmers Mutual Telephone Company serves the southwest Iowa area. The central office is in Clarinda. It is rated among the finest, most modern independent companies and maintains excellent facilities to its 2700 stations, which includes 600 rural stations in the communities of Hollyville and Hepburn.

A. L. "Bert" Kelley is the Manager of Farmers Mutual. Concerning Graybar, Mr. Kelley says:

"We have never had to hold a service order for longer than twenty four hours, due to Graybar's continued supply. This was true even during the war years.

"We know that when an emergency arises, Graybar people take a personal interest in our problem. They do not rest until they have furnished the needed materials and the situation is well in hand.

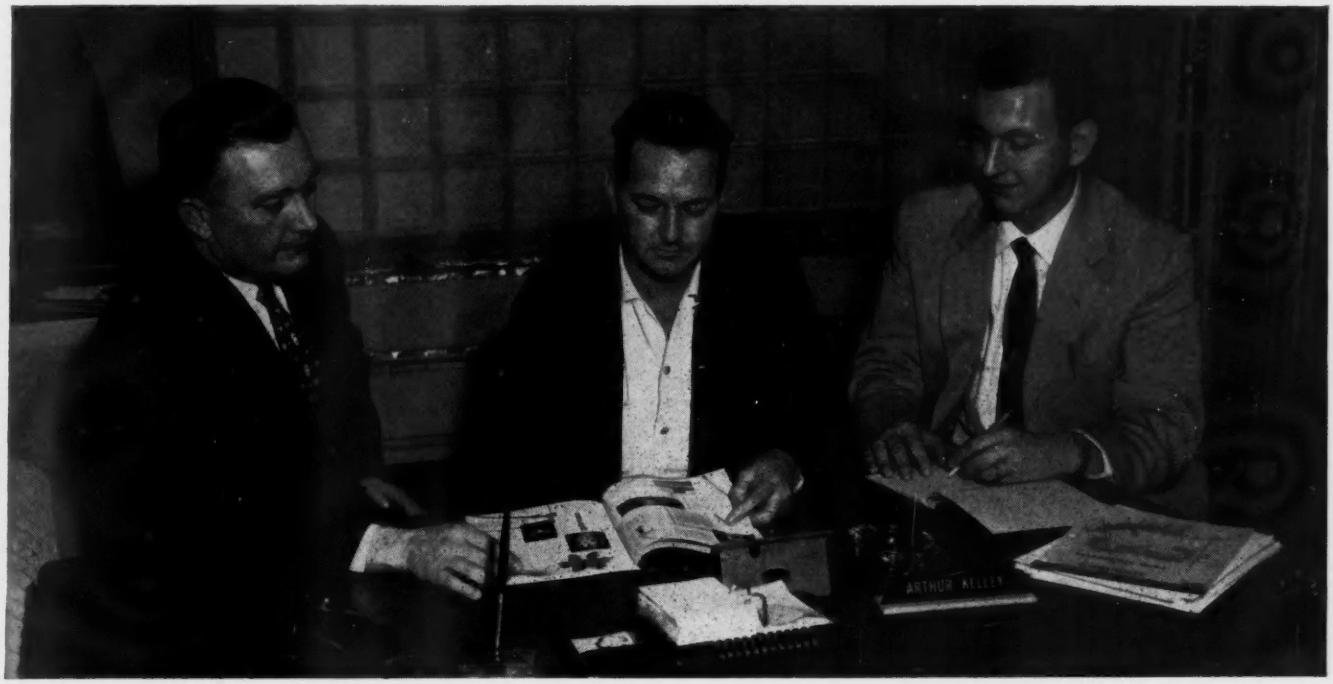
"And we know from long experience, that when we order supplies from Graybar, we are investing our money wisely — in quality material.

"In addition to the quality products which Graybar specializes in, we like the personal services rendered through our Graybar representative, Gene Williams, when he makes his regular calls, and the technical advice and assistance available from Bill Gilbert, Graybar's Omaha Manager of Communication Equipment.

"Graybar's fine position in the telephone industry enables independents like ourselves at Farmers Mutual to have access to the best and newest products in the telephone field. Dealing with Graybar means that we get these fine products *when* and *where* we need them.

"This is another reason why we here at Clarinda have been doing business with Graybar for forty years."

Our thanks to you, Mr. Kelley. Graybar continually strives to keep up-to-date in all phases of the telephone business to better serve independents from coast-to-coast. Many telephone companies rely on Graybar's warehouse system to carry their inventory. Pole line supplies for maintenance and new construction . . . central office equipment . . . subscriber carrier and toll circuit carrier . . . linemen's tools and safety equipment — all are conveniently available from nearby Graybar. Call us for any telephone need. Like you, we are proud of our independent status. Graybar is owned solely by its active and retired personnel.



The Farmers Mutual buys only from the most dependable sources. This philosophy, coupled with a viewpoint of modern and efficient service, enables Farmers Mutual to provide excellent facilities for its 2700 stations. Here, (L. to R.), the Graybar Manager of Communication Sales, Bill Gilbert, discusses pressure testing equipment with Arthur Kelley and Graybar Salesman Gene Williams.

In the cable vault room of the Farmers Mutual Telephone Company, Plant Superintendent Arthur Kelley, center, cable-splicer Ralph Bond, left and Graybar representative Gene Williams check the pressure of the gas filled cable. This project was started in 1955. All of the GMPCO testing equipment was obtained from Graybar.

Linemen Vernon Journey and Charles Johnson pose proudly in front of their construction truck. Farmers Mutual men are provided with the finest in both tools and safety equipment. Though the Company still carries the Mutual in its title, it is a Corporation in which one-third of its thirty-five employees are active stock holders.

635-222

Call Graybar first for...

GRAYBAR ELECTRIC CO., INC.
420 Lexington Avenue
New York 17, N. Y.

Graybar QUALITY 1 *Everything in Telephone Supplies*

IN OVER 130 PRINCIPAL CITIES

Guard your splices right with these

REG. U. S. PAT. OFF.

SCOTCH Electrical Products!

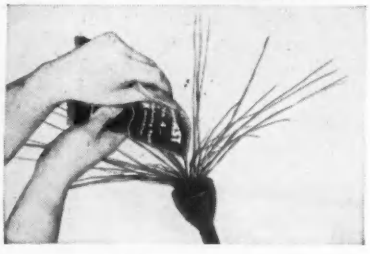
BRAND

Approved for splicing plastic communications cable

"SCOTCH" Brand Plastic Tapes—the *original* plastic tapes. First developed and perfected in our own laboratories. Made to exacting quality standards. Tough, impervious vinyl plastic. Two thicknesses available: 7 mils (No. 33—the standard of all plastic tapes) and 10 mils (No. 22—for extra abrasion resistance).

"SCOTCH" Brand Aluminum Tape — has special adhesive to insure an effective moisture barrier. "SCOTCH" Electrical Tape No. 49 is available in 2 inch by 20 foot rolls.

"SCOTCHFIL" Electrical Insulating Putty —a putty in tape form. Application is clean, rapid, economical. Excellent as a fast build-up for cable splices. Long life, stays firm and flexible, doesn't dry out or become hard and brittle.



"SCOTCHCAST" in "Unipak" Container—casting resin and hardener in plastic double bag. Knead to break inner bag and mix hardener with plastic, then pour. Sets in a few minutes, provides a perfect moisture seal. Makes impervious moisture blocks in cable ends. Especially recommended for splicing lead sheathed cable to plastic sheathed cable.

Above products are approved for use in REA splicing procedures PC-2 and PC-3. Available at your wholesaler. Further information and copies of splicing procedures will be sent free on request. Write Dept. MI-27, Minnesota Mining and Manufacturing Co., St. Paul 6, Minn.

The term "SCOTCH" and the plaid design are registered trademarks of Minnesota Mining and Manufacturing Company, St. Paul 6, Minn. Export Sales Office: 99 Park Avenue, New York 16, N.Y. In Canada: P.O. Box 757, London, Ontario.

3M COMPANY

EDITORIAL

"This Gap Needs Bridging"

ON AT LEAST three occasions during the past eighteen months we have used this page to express our opinion that the gap between high school training and college requirements in this country is *acute* and *tragic*.

And last month at the Winter General Meeting of the American Institute of Electrical Engineers (AIEE) we found another champion of our belief in *M. S. Coover*.

As President of the AIEE and administrative assistant, Division of Engineering at Iowa State College, Mr. Coover is not a new champion of the belief that sound teaching of the physical sciences and mathematics is needed.

In his address at the opening session of the AIEE meeting Mr. Coover used the word "*tragic*" when he referred to the gap that presently exists between high school training and college entrance requirements.

"*We in America*," Mr. Coover said, "*believe in local control over education. It can be made to work properly. Unfortunately school administrators in some communities, acting with good intentions based on inadequate information or yielding to pressure from those who would spare their children from the more rigorous courses in the sciences, have permitted the quality of these courses to decline, or except for mathematics, to disappear. To reverse this trend is neither easy nor inexpensive . . .*"

Such a statement is not new but we believe it should be repeated over and over until more people realize that the lengthening dimension between high school terminus and college entrance requirements is acute and that immediate steps should be taken to reduce that dimension.

We believe the day has come and gone when this country could view with indifference the limited teaching of mathematics and the failure of half our high schools to offer courses every year in chemistry and physics.

To us that day vanished when men clearly saw that in science and mathematics lay our hopes for progress in peace and survival in war.

As we see it the need for developing a corrective program and to take action before the burden becomes too great rests upon three principal bases:

(1) Sound teaching of the physical sciences and mathematics is essential for all high school students if we are to give them the oportunity for a more intelligent understanding of the scientific world in which we live.

(2) Sound teaching of the physical sciences and mathematics is needed to provide fundamental knowledge to the millions of citizens who must make their living in our complex technological world. Their everyday work, essential to keeping our economy in efficient working order, is dependent on more understanding of scientific tools and processes.

(3) Sound teaching of the physical sciences and mathematics is needed to supply the nation with these highly skilled scientists and engineers upon whose work our progress as a nation depends.

The consideration of the importance of those three reasons for developing corrective programs seem to point up the inescapable fact that if we are to measure up fully to the needs of our country and to produce a citizenry oriented to the age in which we live, the teaching of mathematics and science in our high schools must be commensurate with their importance.

Mr. Coover put this a bit differently. He said: "*As engineers and as parents and as citizens who are deeply concerned about the future of our nation we need to evaluate trends in education standards in our own communities very carefully. This is an individual problem for each of us. We need to realize that the time is upon us to develop a corrective program wherever needed and take action before the burden becomes too great. No burden is too great to bear if it means national preservation. The gift of educational opportunities for our youth is ours. It is our responsibility both individually and collectively to make the best use of this heritage . . .*"

Those words sort of place the responsibility where it belongs — right on the local level where education has its roots and right where action must be started if the "gap" between high school training and college entrance requirements is to be reduced. They are the kind of words that deserve more listeners and more readers. We hope you'll pass them around and put them to work.

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How you can solve your subscribers' s

with these Stromberg-Carlson *standard* i

Subscriber's problem: how to make it possible for every station in a small office to originate, answer, hold or transfer calls on 1 to 5 lines.

Solution: Stromberg-Carlson No. "1575" multi-line telephone, which offers many arrangements for trunks, intercom, signaling and holding.*

*Aailable only for use with the "6K" multiline systems.

Subscriber's problem: how to keep a third party from interfering on a rural party line conversation or from mutilating dial pulses of a call in progress.

Solution: Stromberg-Carlson "1543" telephone with 2-step hookswitch. When user lifts handset, only his receiver is connected to the line. If he hears nothing, he presses the button and makes his call.

Subscriber's problem: how to enjoy the advantages of extensions without upsetting a carefully planned interior.

Solution: Stromberg-Carlson color telephones, available in 8 exciting decorator colors which add a touch of beauty to any room.

Subscriber's problem: how to make sure his telephones will harmonize with his smartly styled modern office.

Solution: Stromberg-Carlson "G-1543" telephone in office gray, with matching dial and gray Koil Kord.

Subscriber's problem: how to have an extended range telephone that doesn't look like an odd contraption.

Solution: Stromberg-Carlson No. "1543-W" telephone—the only extended range, high gain phone that looks exactly like a standard set.

Subscriber's problem: how to keep the telephone out of the children's reach.

Solution: Stromberg-Carlson No. "1543" standard table telephone converts easily to wall mounting. Changeover is made simply by changing hookswitch plungers and rotating dial 180 degrees.

special problems

instruments

Subscriber's problem: how to meet the need for 2 outside lines, plus intercom, with one telephone.

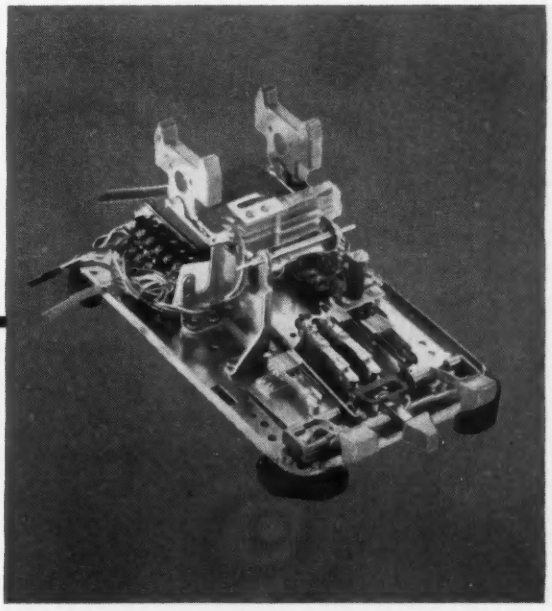
Solution: Stromberg-Carlson No. "1573" 2-line telephone, which provides for using or holding 2 lines, plus access for office intercom.

You can solve the 7 business and residential subscriber problems illustrated here—and more—with these standard instruments from our "1500" series.

You'll keep your subscribers happy and boost your own income because this is a *complete* line of telephones. They're all *standard* instruments, which means your inventory and maintenance costs are kept at a minimum.

Your Stromberg-Carlson representative will gladly explain the operating features of our "1500" line and give you full details on its revenue-building advantages. Phone or write him now.

It pays to standardize on Stromberg-Carlson instruments!



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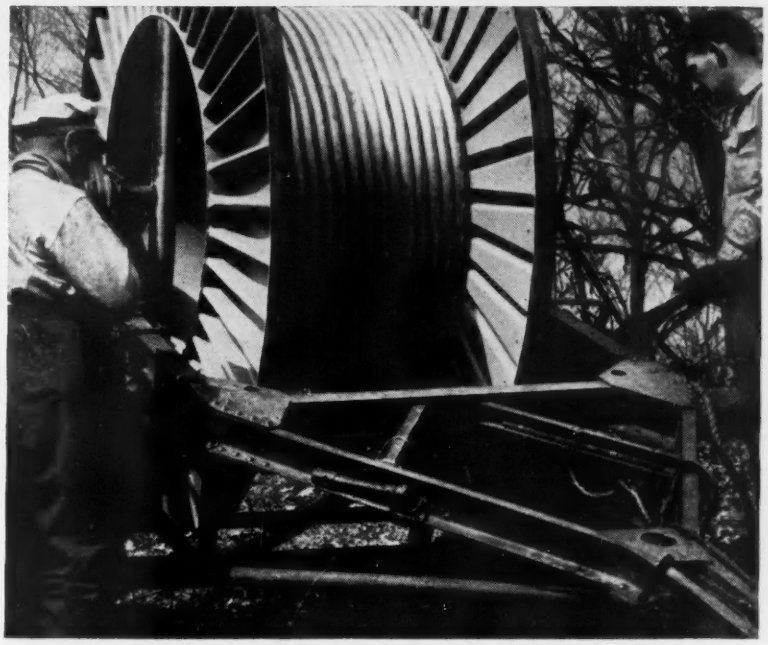


Maintenance Problems

In The Independent Industry

By B. L. ARNOLD*

In this stimulating article Mr. Arnold points up the basic responsibilities of the telephone industry — good local service, good toll service and the constant improvement of the quality and efficiency of telephone service — and emphasizes that such responsibilities can be met only by better equipment, better operating techniques and better maintenance.

THE TELEPHONE industry has three basic responsibilities to the public: (1) It must provide good quality local service at reasonable rates; (2) it must provide good quality long distance service at reasonable rates; and (3) it must strive continually to improve the quality and efficiency of its services through better equipment, better operating techniques, and better maintenance.

The advent of nation-wide toll dialing has made the fulfillment of these responsibilities more important than ever before. All telephone companies — the 4500 Independents as well as those in the Bell System — are vitally concerned with providing this new service to the communities they serve.

**Mr. Arnold, manager of distributor sales, Lenkurt Electric Co., San Carlos, Calif., presented this paper at the fall general meeting of the AIEE.*

The Maintenance Problem

ONE OF THE important ingredients of high-quality local and toll service is maintenance. In fact, current trends indicate that this may become the most critical ingredient of all — especially as the new toll dialing plan approaches full fruition.

Under the new plan, most calls will be completed by automatic switching machines and will not have the services of the toll operator to detect faulty links. This means that the equipment will have to be kept in better operating condition and circuits will have to be routined more frequently to determine their operating status.

Furthermore, a uniformly high grade of service will be necessary throughout the nation-wide system. Successive calls between two points may involve widely varying numbers of toll links. Therefore, to maintain uniform transmission quality from call-to-call and throughout the system, a very small performance tolerance for each individual link will be required. It is evident that the effectiveness of the plan will be only as good as the performance standards of all companies involved.

Although plant maintenance requirements are basically the same in both Independent companies

and the Bell System, in some respects maintaining the Independent plant is more difficult.

Specifically, the Independent telephone company often has more difficulty in maintaining a uniformly high level of equipment performance, in acquiring and training engineering and maintenance personnel, and in financing those activities that improve service and make maintenance more effective.

Equipment Maintenance

ONE OF THE factors that complicates equipment maintenance in the Independent industry is lack of equipment uniformity. In the past equipment often has been selected on a competitive bid basis with the result that in one exchange area or toll office several different makes and types of equipment may be used for the same type of operation.

For example, a single exchange area may have as many as six different makes of subscriber sets, or a single dial office two or three makes of switching equipment. Maintenance and operation difficulties are greatly increased by this mixture of equipment types, since maintenance personnel need additional training and spare parts have to be stocked for each different type.

A number of companies are operating at reduced efficiencies by maintaining older equipment that was not designed to handle today's heavy traffic requirements. Existing older equipment frequently costs more in maintenance and operating time than it earns in revenue. There is often great reluctance to give up outmoded equipment since the immediate out-of-pocket expense to keep it operating is less than the cost of replacement — even though in the long run, replacement would be cheaper.

An important factor that causes variations in equipment performance from company to company is differences in maintenance routining practices. In some companies, plant expansion programs, shortage of trained personnel and heavy work loads have caused maintenance schedules to be prolonged for greater periods of time than is desirable. As a result, there is considerable variation in the quality of local and toll service among the various companies.

B. L. ARNOLD, mgr., distributor sales dept., Lenkurt Electric Co., San Carlos, Calif.

Cleanliness control in central offices is another ever-present struggle — especially so in those offices that house intricate dial switching equipment. In a few Independent companies — and perhaps in some Bell companies — central offices are sometimes used as storerooms, working spaces, and as a shelter for outside workmen during adverse weather. Careless workers and unauthorized persons, using central office buildings for purposes other than intended, cause dust and foreign materials to lodge in the equipment resulting in faulty operations.

Maintenance Personnel

ONE especially difficult maintenance problem area of the Independent telephone industry concerns personnel. Since the size and type of operation of Independent companies vary from the rural company with one man who is owner-engineer-maintenance man to multimillion dollar systems with thousands of employes, there is a wide range in the caliber of personnel engaged in maintenance. Many companies serving smaller communities do not have a large technically experienced manpower pool to draw from like the companies serving thickly populated areas.

The problems of training new personnel in the smaller companies are greater than those of the large companies in that small companies cannot economically set up training courses covering all phases of their operation. To be really effective, the individual employe working for a small company must have a more general knowledge of the business and be possessed of more diversified skills than would be required if he worked for a large company.

Financing Maintenance

WHILE MUCH can be done to improve and standardize equipment performance through more careful equipment selection and personnel education, the amount of effort that can be expended in these directions is limited by the financing available for maintenance programs and personnel training.

Because many Independents serve rural areas, rates are low and the ratio of plant investment to income is considerably higher than for companies serving urban areas. This restricts the amount of money available for maintenance and makes the attraction of capital for plant modernization very difficult.

Inadequate rate structures place some companies in the position of a dog chasing his own tail; that is, they cannot obtain higher rates without improving their service, and they cannot improve their service without the capital that the higher rates would provide. To complete this circle, outside financing cannot be secured without a satisfactory rate structure to insure an adequate return on investment.

The finance problem is inextricably interwoven with equipment and personnel problems. New equipment procurement plans, maintenance programs and employe training can be vastly improved when funds for these functions are available.

What Needs To Be Done

CAREFUL investigation of the difficulties the Independent has with maintenance will show that they result primarily from the natural diversity of the industry. Any group of free individuals or companies is certain to take many different approaches to the same basic problems and to arrive at a number of different solutions. Forward thinking leaders of the industry accept this as natural and proper and have long recognized that this diversity is one method by which progress is made. They recognize too, that the very freedom and

independence which has brought progress tends to be incompatible with the uniformity of performance so vital to successful completion of the nation-wide toll dialing plan.

The basic problem, then, is how to have uniformity without giving up independence. This is a tough problem. Strong efforts are needed to solve it. And solve it we must, if nation-wide toll dialing is to become truly nation-wide.

Some efforts are already being made, but much remains to be done. First, the industry needs to become more maintenance conscious. There needs to be a wider-spread recognition of the importance of maintenance.

When purchasing new equipment, one of the factors that needs to be considered is the amount of maintenance required and the ease with which it can be done. Old equipment needs to be kept under close scrutiny so that it can be replaced when it becomes too costly to operate.

A maintenance conscious industry will work for the establishment of equipment performance standards and will encourage manufacturers to recommend — and telephone companies to use — maintenance procedures and routines that will keep equipment performance up to standard.

Increasing awareness of the need for maintenance will also provide the impetus for improved selection methods for maintenance personnel and wider use of maintenance training programs. Those Independent companies that have organized their own training programs or have sent technicians and engineers to manufacturers' schools are already realizing that the time and money was well spent and is paying off in better service, lower maintenance costs, and better equipment utilization.

There must also be the realization in the Independent industry that money spent on good maintenance is a sound investment. A strong argument that can often be made for rate increases is that to provide subscribers with good service requires proper maintenance and proper maintenance costs money. To defer the establishment of a rate structure that is cognizant of maintenance costs is to reduce service quality and indirectly cost the subscriber money and inconvenience because of inadequate communications between himself and the rest of his community and nation.

"A MAINTENANCE conscious industry will work for the establishment of equipment performance standards and will encourage the use of maintenance procedures that will keep equipment performance up to standard."

What Is Being Done

CONSCIOUSNESS of maintenance has been increasing during the past few years. Through the efforts of groups such as the Plant Committees of the United States Independent Telephone Association (USITA) and through the exchange of information at AIEE meetings, efforts are being made to encourage improved maintenance and to standardize central office and station apparatus.

As a result of the increased emphasis on equipment maintenance, better, more trouble-free equipment along with better maintenance instructions is being made available to the industry by independent manufacturers. More realistic maintenance training programs are being developed by the operating companies. The increasing co-operation between operating companies, government and private service groups, and equipment manufacturers is beginning to have results.

Newer types of equipment, designed with reduced maintenance in mind, are being made available to the industry. Manufacturers are learning to anticipate most normal operating troubles and improve their products to the point where little corrective maintenance is required.

Telephone equipment is also becoming more automatic with fewer adjustments and fewer limited-life parts — thus requiring less operating and maintenance attention. For example, some new types of carrier equipment employ inband channel regulators to maintain voice-frequency transmission and signaling levels over long periods of time without the necessity of frequent readjustments. Such units alone can reduce operating and maintenance costs of toll circuits by as much as 60 to 75 per cent.

Another example is the automatic routiner that is offered with most new dial offices. This unit permits a company to operate with fewer highly skilled equipment men, and at the same time provides improved service to the customer.

Throughout the industry, older equipment is being replaced with newer, more flexible types. The older types of equipment were often designed for a specific operation and do not have the newer equipment's inherent flexibility. Modern equipment is being built to expand with increases in traffic demands, to be interchangeable, and to require less maintenance and routining.

A high degree of flexibility and interchangeability of electronic equipment such as toll carrier is being obtained by use of plug-in units. As traffic requirements change, company technicians can move these units from one system to another or they can fill partially equipped systems from their spare stock. Also, entire equipment shelves can be moved to other locations for seasonal business or replacement of older equipment.

An effort is being made in some Independents to standardize their equipment — at least within indi-

vidual exchange areas and toll offices. They are realizing that there is no real economy in whatever make of equipment happens to be cheapest at the time. Standardization enables operating companies to avoid large storeroom stocks of spare parts and materials, maintenance men can become more familiar with their assigned equipment, and training programs can be more effective.

A current trend among progressive companies is a more realistic look at routining periods. In the past, maintenance routining was often delayed by increased work loads, plant expansion programs, and lack of skilled manpower. Through these delays, it was discovered that many routines were previously performed at too-frequent an interval. Thus, many companies have arrived at the conclusion that too much maintenance routining actually can cause more trouble than it prevents. However, further tests have shown that there is a compromise point with respect to routining. They have learned that too little maintenance is also harmful and will leave them stranded when they need their facilities most.

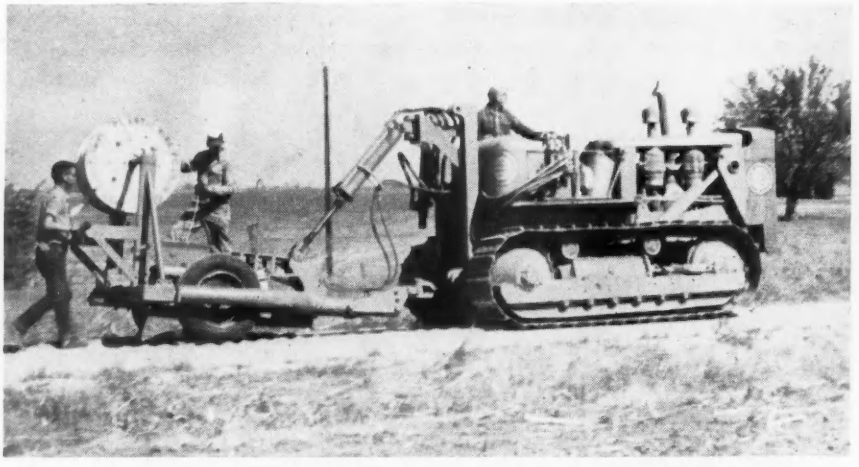
Selection and Training Of Personnel

PERSONNEL selection methods for maintenance personnel in the larger Independents are undergoing constant improvements; a more thorough screening of applicants is being instituted to determine their aptitudes and possible future potential. An effort is being made to determine exactly how much training will be required to make good telephone men of them. Also, older employes are being given refresher courses and training in new equipment to keep them in step with technical progress.

Organized training programs are supplementing and sometimes replacing the absorption principle where new men are placed with older, more experienced employes to learn their trade. In many cases these older employes are highly skilled craftsmen, but may not be good instructors. A combination of organized training plus on-the-job training is becoming the most accepted practice.

Some operating companies have started their own training schools for their operating, maintenance, and management personnel. For example, one larger independent telephone company in the Southwest has started a well organized training program for both inside and outside plant employes. It is understood that these courses are open to a limited number of employes of other companies as well.

A number of manufacturers and equipment suppliers provide free training and refresher courses in the operation and maintenance of their equipment. These training courses have been enthusiastically received by operating companies everywhere, and in one instance there is a six months waiting list for the courses.



"AS A RESULT of the increased emphasis on equipment maintenance, better, more trouble-free equipment along with improved maintenance instructions is being made available to the industry by the manufacturers."

Some companies send their men to these schools with the idea that they will return to their companies and set up a similar training course.

In some cases, manufacturers and suppliers are operating class-rooms on a full-time basis with full-time instructors. Where special on-the-job instruction is needed, instructors go to the company's premises to conduct training. Generally, classes run from one week to three months in duration.

Financing Maintenance

DEFINITE steps are being taken to reduce the financial problems of the Independent telephone industry. Government and private agencies have been formed to assist and advise the companies on business and technical matters. The Rural Electrification Agency, for example, is providing financial assistance to rural telephone companies in areas that cannot attract sufficient private capital. The USITA maintains a full time staff to provide information on finance, operation, and other business functions to all Independents. The USITA is a focal point for the gathering and dispensation of techniques and practices of the Independent Industry.

One very effective unit of the USITA is the Toll Settlements Committee. Through its efforts many companies have had favorable adjustments made in their toll compensation agreements with connecting companies. These adjustments have been sufficient in some cases to make these companies financially sound.

Consolidation of smaller operating companies into larger ones is making available more money for plant improvements, expansion of service, and better training and maintenance programs. Also, some manufacturers and distributors are providing financial assistance when their equipment is purchased.

Conclusion

ALTHOUGH the problems of the Independent telephone industry are serious, they are not insurmountable. Greater advances have been made in the Independent industry in the past 10 years than in the previous 25. The advance will be even greater in the next 10. There are many heartening signs that the maintenance and operating problems of the industry will eventually be solved to the extent that *all* communities can enjoy the benefits of nation-wide dialing.—*B. L. Arnold*

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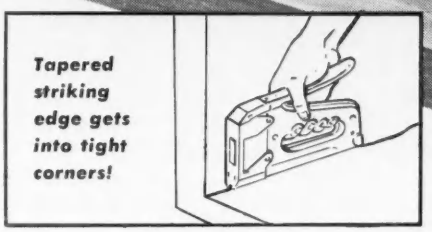

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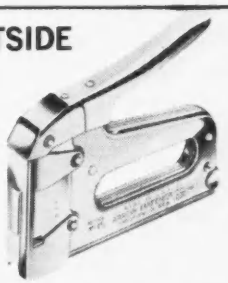

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profits and service through better management

By JAMES L. MORRISON

IN CHAPTER III of his article Mr. Morrison points out that labor will continue to be one of the largest elements of costs in producing telephone service and describes modern method of controlling labor costs. Chapter II appeared in the January 15th issue of "TELEPHONE ENGINEER & MANAGEMENT."

ALTHOUGH American ingenuity has produced a host of labor saving devices, the telephone industry can anticipate that labor will continue to be one of the largest elements of cost in producing telephone service.

In the years to come it is probable that the cost of labor will continue its upward spiral. These economic facts make it essential that our industry constantly seek new and better ways in which to improve employe selection, training, and supervision. In fact, private enterprise must meet this challenge if it is to survive.

The great majority of employes expect to do a fair day's work for a fair day's pay. Those who do not are a liability and the company cannot afford to keep them on the payroll. Even the most willing worker, however, cannot produce at full capacity unless he has been properly selected, well trained, and correctly supervised.

The first step in controlling labor costs is the proper selection of employes. Proper selection will help to insure employing the right person for the right job. It is expensive to hire and train a worker and then discover he does not fit into the operation.

Know the Job

WHEN a vacancy occurs the individual responsible for hiring should have a clear understanding of the work to be performed. He should be certain that the job fits logically into the organization structure and know what personal qualifications are required for satisfactory job performance. For example, if there is an opening for a cashier then the individual selected should be friendly, relaxed, courteous and otherwise capable of making a good impression.

Recruiting

IN TIMES of full employment the right worker for a specific job may not always show up when the vacancy occurs. As a rule an employer cannot wait for qualified workers to come seeking employment. Good men seldom have difficulty locating employment.

If at all possible several prospects should be considered for each opening. An employer usually will make a better choice if given the opportunity of interviewing several candidates for each job.

Prospects can frequently be found through state and private employment agencies. Private agencies usually try to send a well qualified applicant because they hope to be called upon to fill future vacancies.

Present employes are a very good source for prospects. They should be encouraged to recommend their friends. As a rule they will recommend only those who will become good workers.

Additional possibilities are friends, high school graduates, newspaper and trade journal advertisements, ministers, and your telephone association. Do not hesitate

to spread the word far and wide. Your objective is to obtain as many prospects as possible.

Applications

ALL PROSPECTS should fill out an application form provided by the company. It is desirable for the applicant to complete the form in his own handwriting. The form should provide space for basic information about the applicant. This would include birthdate, record of education, previous employment and reasons for leaving, marital and family status, specific skills or abilities and at least three references.

Use of the application form will enable the employer to select prospects most suited for the job. This preliminary screening will save time and expense.

Interviewing

PROSPECTS whose applications appear to meet the job requirements should be carefuly interviewed. The applicant should first be put at ease by discussing matters of general interest. Frequently the applicant

SINCERE interest in a new worker not only helps to assure proper induction, but also lays a firm foundation for genuine employe loyalty.

and the interviewer will find a common interest or acquaintance.

Ask the applicant well-directed questions which will supplement or clarify information in the application form. A check list covering such points as personal appearance, manner and attitude will help the interviewer adequately appraise the applicant. Investigation to determine the individual's ability to get along with people and his credit rating is also desirable.

It is important that the applicant receive a complete and accurate picture of the job's requirements and opportunities. Much labor turnover can be attributed to the fact that the employe did not have a clear understanding of what the job entailed before he started. A check list covering such items as pay, working hours, benefits, overtime, and training will be very helpful. Opportunities for promotion should be discussed along with an overall description of the company operation.

Health is an important factor in how well employes do their work. It may be wise to require new employes to take physical examinations before employment starts. A doctor's report might disclose a physical condition which would be aggravated by the contemplated employment.

Give the applicant ample opportunity to ask questions about the company and its employes. Very frequently the questions he asks will provide a reliable guide to his attitude and expectations. A person interested only in the size of his pay check is likely to leave for the first job that pays a few dollars more.

During the interview watch for the following: (1) people who do not give good reasons for leaving previous jobs; (2) people who are willing to work for substantially less than they earned at previous employment; (3) people who are having domestic troubles; (4) people who have a record of jumping from job to job with less than a year between jumps; and (5) people who have "reformed."

This does not mean that those who fall in one of these categories should not be employed, but experience has proved that when they are, the chance for turnover is increased.

The interviewer has two objectives: first, to be certain that he selects the right man for the right job; and second, to be certain that the man feels the job is right for him. Both are essential because even the best worker will leave if he does not like his job.

Interviews can be satisfactorily concluded by telling the applicant that several other people are also being considered and that he will be notified within, say, three days, if the company is able to consider him further. Thank the applicant for his interest.

Testing

MORE AND MORE companies are using tests before hiring workers. There are intelligence tests, manual dexterity tests, aptitude tests, psychological tests, and trade tests. Some tests are too expensive for the small company, but others can be used with little expense. The value of testing lies in the help it gives in eliminating guesswork about the individual. There is no such thing as a perfect test, however.

It is suggested that the employer may wish to consult with the head of the psychology department of a nearby college or university for tests that are available and the costs involved.

References

THERE IS a wide difference of opinion among employers as to the value of references. Some feel they are worthless because the applicant will list only those from whom he feels certain that a favorable report can be obtained. Others believe that references should be checked, particularly if they include former employers.

When writing former employers ask for a verification of the dates of employment and the wage rate at the time of termination. Ask if the individual was a steady worker, why he left, and would he be re-employed. If there is a continuing need for new employes a form might be prepared for mailing to former employers.

Induction

THE FOREGOING employe selection procedure will assist management in finding the right type of worker for the job. The hiring process is not complete, however, until the new employe is actually on the job and working.

A new employe's introduction to the company and the job is very important. A person's first impressions

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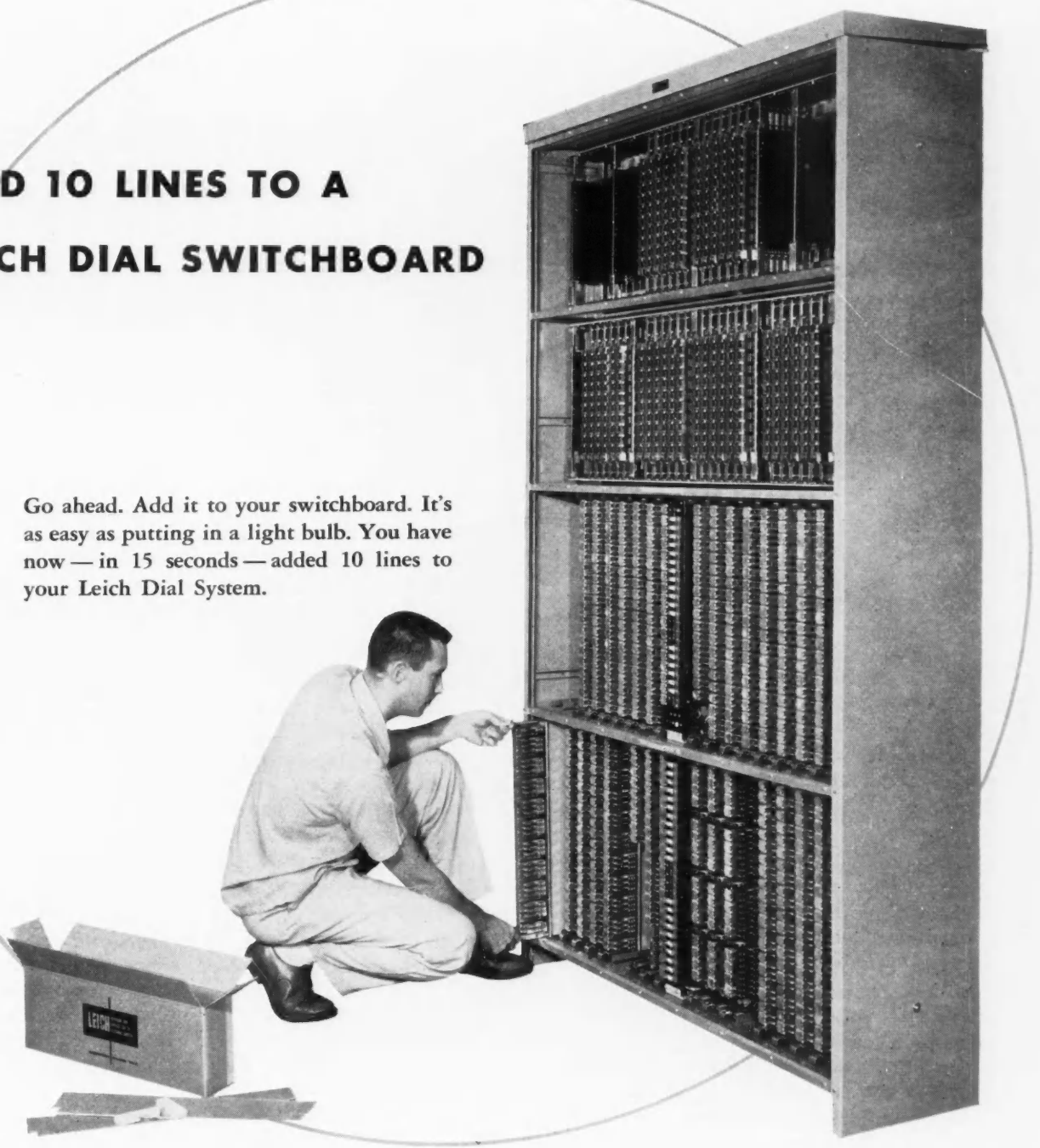

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will affect his attitude and morale for months to come. The job should be carefully explained to him along with all benefits, restrictions and personnel policies. Tell him about the company, its history and objectives. Encourage him to ask questions in order that he will have an overall perspective.

He should be welcomed and made to feel at home. Introduce him to other employes. Help him get started with his work. After a few days on the job discuss his progress and give him ample opportunity to ask questions. Explain his first pay check and all deductions.

In summary, apply the "golden rule" to each new employe. Help him just as you would want to be helped in a new job. Sincere interest in a new worker not only helps to assure proper induction but also lays a firm foundation for genuine employe loyalty.

Management Selection

ALTHOUGH the successful operation of a telephone company depends upon everyone working together, the manager or supervisor is a key figure and success or failure will depend in large measure upon his abilities. The board of directors will look to the manager as the individual responsible for carrying out the overall plan of operation. The employes will look to the manager or immediate supervisor as being the "boss." In their eyes he is "the company."

The techniques used in employing new workers also apply to the selection of a manager or supervisor. Extra caution is necessary, however, because of the key role this individual plays. If he is to successfully operate the company he must possess certain qualities and characteristics.

It has been said that good managers are born and not made. While there may be some truth to this it is still believed that the ability to manage well can be acquired by most people who set their minds to it. It isn't an easy task and the volumes of writing on the subject of executive performance often set such high standards that many potential managers become discouraged before they start.

No one is perfect and no one can measure up to all of the standards considered necessary for the mythical ideal manager. It is suggested, however, that the following material will be helpful in selecting proper management and supervision.

A good manager is intelligent. This does not mean that he possesses a trunk full of college degrees but it does mean that he thinks clearly, concisely and logically. He ascertains the facts, studies them and then bases his decisions on sound judgment. He makes up his mind and then acts. An intelligent individual is open minded. He will listen to others, particularly his associates, and he will be ready to change his views if a better approach is presented.

He is emotionally stable. A problem is a challenge and not a cause for panic. Inconsistency and moodiness will confuse his workers and unless they can judge his reactions and know what is expected of them, they will fall apart as a team. He is considerate of others and will not permit his personal feelings to interfere on the job.

A good manager is skillful with people. The success of a business depends more and more upon the ability to manage people. He must be interested in his coworkers and considerate of their needs, desires and ambitions. He knows that the workers under him will follow the example he sets, and that sincerity develops proper relationships with people. He also knows that an understanding of human motivations will help him to lead.

A GOOD MANAGER recognizes his responsibility to the company, to the employes and to the community.

A good manager accepts responsibility with the realization that a task to be performed is an opportunity to prove himself. He recognizes his responsibility to the company, to the employes and to the community. He establishes a reputation for dependability and wants to live up to it. He is aggressive. This does not mean that he is high-pressure but it does mean that he likes to accomplish and grow. He seeks new ways of doing things. He dislikes doing things one way simply because they were always done that way.

A good manager expresses himself well and makes himself understood whether through the written or spoken word. He realizes that his success will depend upon his ability to put his ideas, plans and methods into action with and through others. Many a potential manager has died on the vine because he could not translate good ideas into words.

A good manager is a planner. He knows how to plan and applies that knowledge to even the smallest problem. He is well organized so that he knows what equipment, men and money will be needed to carry out the plan. He then directs the plan to successful conclusion.

Although most everyone has some ideas about the characteristics desired in a good manager, it isn't always an easy task to find and evaluate the right man. The demand for managers is so great that a good man seldom needs to seek a job. Jobs will seek him. The task of finding the right man, however, will be made easier

Please turn to page 54

ACME VISIBLE

UNDER-GLASS BULLETIN HOLDER

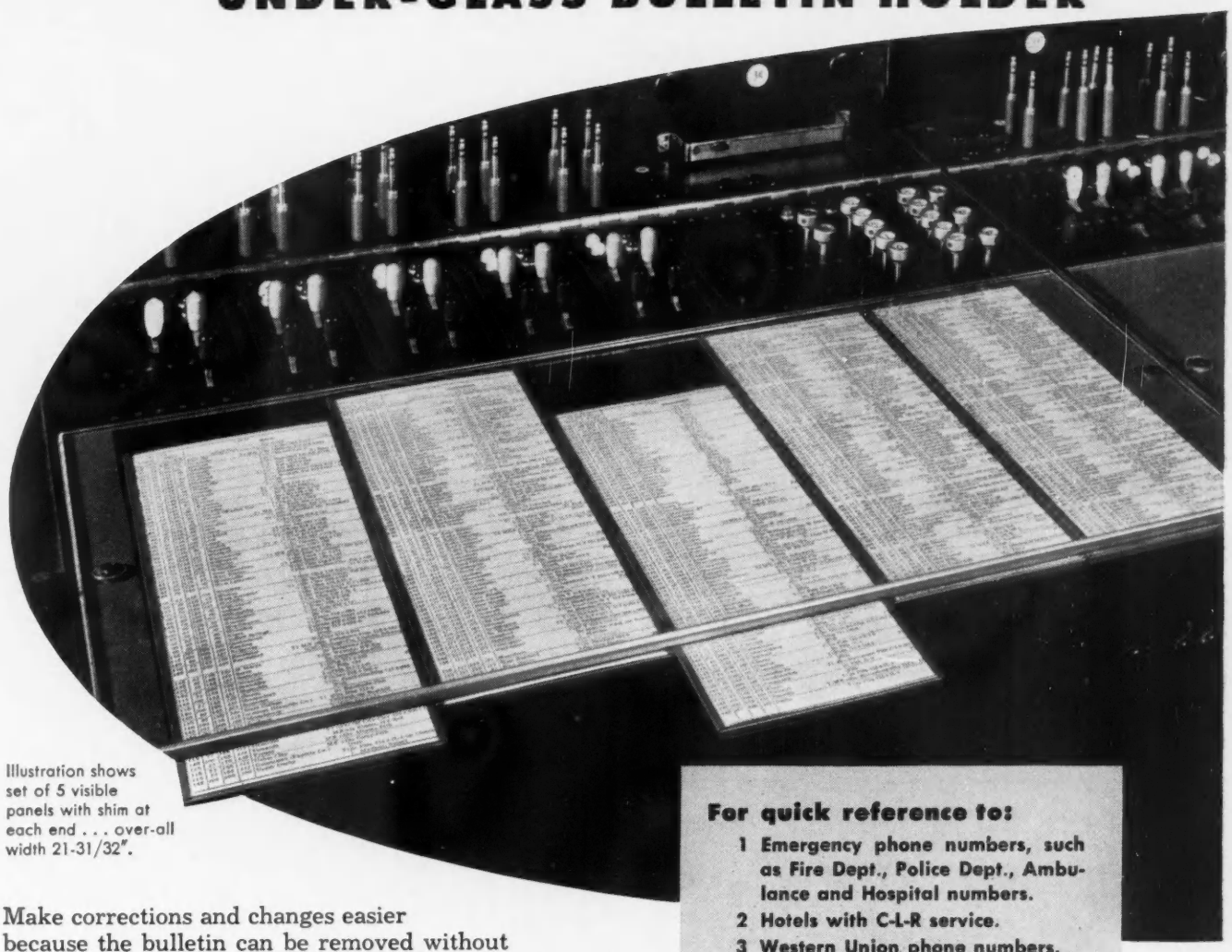


Illustration shows set of 5 visible panels with shim at each end . . . over-all width 21-31/32".

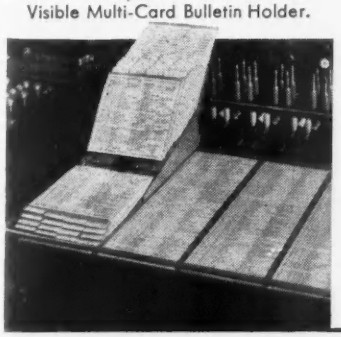
Make corrections and changes easier because the bulletin can be removed without loosening the glass. Being divided into a number of panels only the panel (page) to be corrected need be removed. One piece steel construction, flanged at back and side edges to hold the bulletin in place. The front edge is formed to provide a "pull" to slide panel out. A shim at each end panel makes the over-all width the same as the Bulletin Glass space. Shims are slightly thicker than panels and have a slot through which the Plexiglass screws hold the glass firmly, and permit sliding the individual panels in and out. Made to meet dimensional requirements both as to individual panels and over-all size of boards.

For quick reference to:

1. **Emergency phone numbers, such as Fire Dept., Police Dept., Ambulance and Hospital numbers.**
2. **Hotels with C-L-R service.**
3. **Western Union phone numbers.**
4. **Telephone numbers of local companies receiving frequent long distance calls.**
5. **Frequently called direct circuit points and tributaries.**
6. **DSA Toll points.**

Acme Visible Equipment has been designed for telephone use by Acme Systems Engineers in close cooperation with practical, experienced telephone experts. Tell us your requirements and receive our suggestions and quotations.

Used in conjunction with an Acme Visible Multi-Card Bulletin Holder.



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☐ #1088 on Acme Switchboard Keyshelf Units ☐ #975 on Acme Flexoline

☐ Have representative call. Date_____ Time_____

☐ We are interested in Acme Visible equipment for_____ (KIND OF RECORD) records.

COMPANY_____ ATTENTION_____

ADDRESS_____

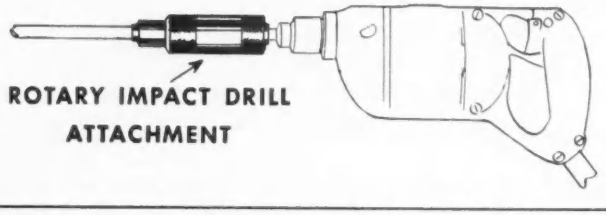
CITY_____ ZONE_____ STATE_____

A directory for the
Viroqua Telephone Company, Viroqua, Wisconsin
printed by

R. R. DONNELLEY & SONS COMPANY

350 East Twenty-second Street, Chicago 16

Drill a Hole in Concrete in 29 Seconds with a "HAMMERIN HANK" attached to any 1/4" electric drill.... **Price $15.50**



Uses ¼", ⅜", ½", ⅝", ¾" and ⅞" carboloy drills. You can get pneumatic action from an ordinary ¼" electric drill. "Hammerin' Hank," fits any ¼" electric drill chuck — Bore one inch holes in solid concrete in 29 seconds. Inner cam mechanism imparts a hammer-like impact every half revolution. No binding, no dust explosion — but a constantly changing "bite" on the material. As a result, very little pressure is required.

Price $15.50, slightly higher west of the Rockies.

Order from your distributor — or write

POWER TOOLS, Corp.

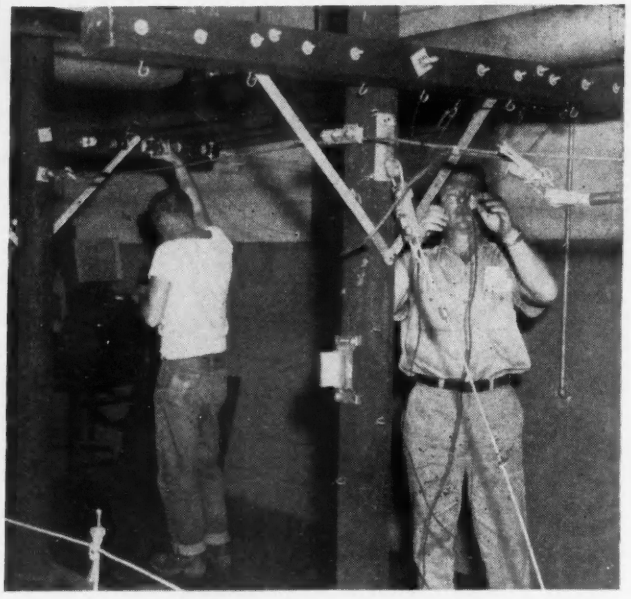
1427 Lakeside Avenue — Cleveland 14, Ohio

Better Management

(Continued from page 52)

if the company is prepared to help him grow with the organization.

A selection should be made from applications and interviews. The written application is very important and if properly analyzed can provide clues on which to judge an individual's ability to succeed. Good men seldom float from one job to another and they tend to receive fairly rapid promotions. High educational level does not necessarily mean success for anyone. Wide interests in various organizations and activities is often a favorable sign but it can also mean that the individual

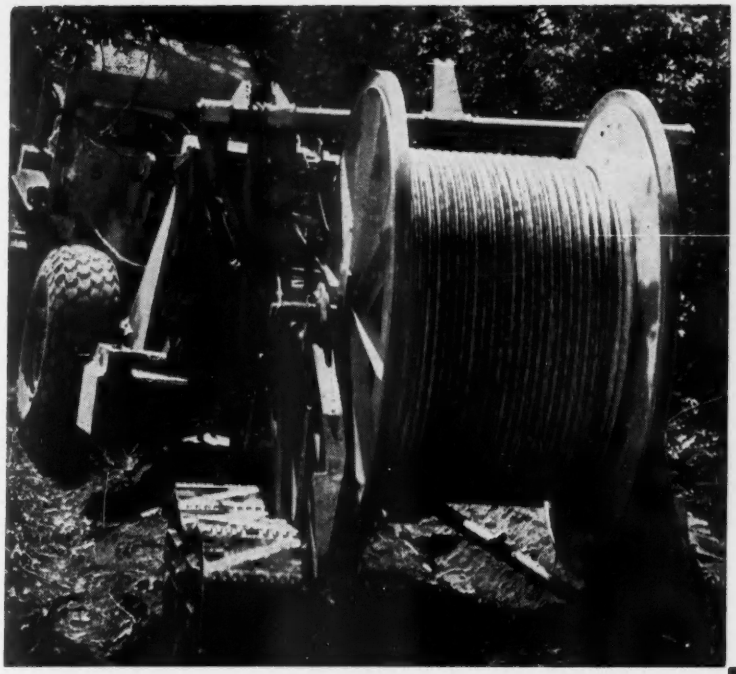


A GOOD MANAGER is skillful with people. He knows that the workers under him will follow the example he sets.

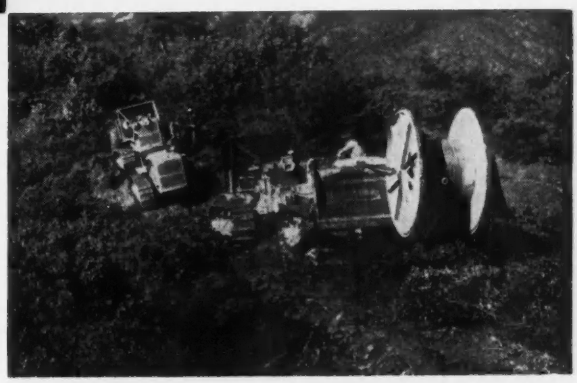
is emotionally insecure. Elective offices held is often a good indication. The home and family background play a large role in any individual's success. Happy homes tend to produce happy people.

Although a telephone company manager should possess certain technical ability and have a certain amount of experience, it is very easy to overemphasize the value of experience. Some people do not learn from experience. They absorb and gain knowledge but do not acquire wisdom.

An individual's personality can be evaluated from a well-planned interview. Hap-hazard questioning will still leave many things up in the air. Put the applicant at ease and then stage a discussion in which the applicant meets arguments. This will give you a check on his emotional stability. Ask him questions and stage situations which will reveal something about his ambitions, energy, and social adjustment. Be fair and give him ample opportunity to ask questions. After all, you don't want a man who is looking for a job, you want a good man who is looking for a good job. Give him an opportunity to learn something about the company and its people. Help him to decide whether or not he wants to work for you. If he makes the wrong decision he will not stay long.—*To Be Continued.*



Modern Cable Construction



SECTION VIII-G of Mr. Reed's article discusses: (a) Use of Cable Supports; (b) Terminating Lashing Wire at Cable Splices; (c) Splicing Lashing Wire; (d) Mechanical Protection of Lashed Cable; and (e) Use of Cable Molding. Section VIII-E appeared in the December, 1956 issue of "Telephone Engineer & Management."

By JOHN S. REED

PLASTIC CABLE guards may be used for protecting the cable at poles and friction points. Such guards are employed at line poles in prelashed cable construction.

Where gaps occur between the cable and the strand as at cable splices, the lashing wire should not be spiraled around the cable and strand, but should be kept off the cable within this section. In this "open" method of terminating lashing wire, the cable is supported on the strand by means of metal straps with cable spacers or strap hangers, termed lashed cable supports and aerial cable supports, respectively. *Figures* 234 *to* 237 show how these two types of supports are made up. The tables included in the illustrations indicate the size of supports or strap lengths for the sizes of cable or sleeve to be supported.

At dips and rises and at bends due to turns in the cable lead lashed cable supports may be utilized to fasten the cable to the strand at the points where the cable leaves the strand and where it resumes contact with the strand. At points where the cable is separated from the strand, lashed cable supports with spacers or aerial type cable supports should be used to maintain the separation and properly support the cable. In general, lashed cable supports with cable spacers are employed when the space between the cable and the messenger is one inch or less and aerial cable supports are used where the space is greater than one inch.

To facilitate the adjustment of heavy cable to the proper distance below the messenger for placing the supports on cable and sleeves, the tools shown in *Figures* 238 *and* 239 may be utilized. Their use will prevent damage to wiped joints on heavy cable splices as the result of movement of the cable and sleeve while placing the cable supports. The cable is also hung in temporary rings or loops of wire or marlin at other points along the part of the cable that is not to be lashed to the messenger.

Where lashing wire is to be kept off the cable at splices and at poles, lashing wire clamps may be employed to terminate the lashing wire on the messenger at these points. Typical lashing wire clamps are illustrated in *Figures* 240 *and* 241. These clamps should be properly placed as indicated to prevent inadvertent slacking of the lashing wire, and the clamp nuts should be tightened with a wrench.

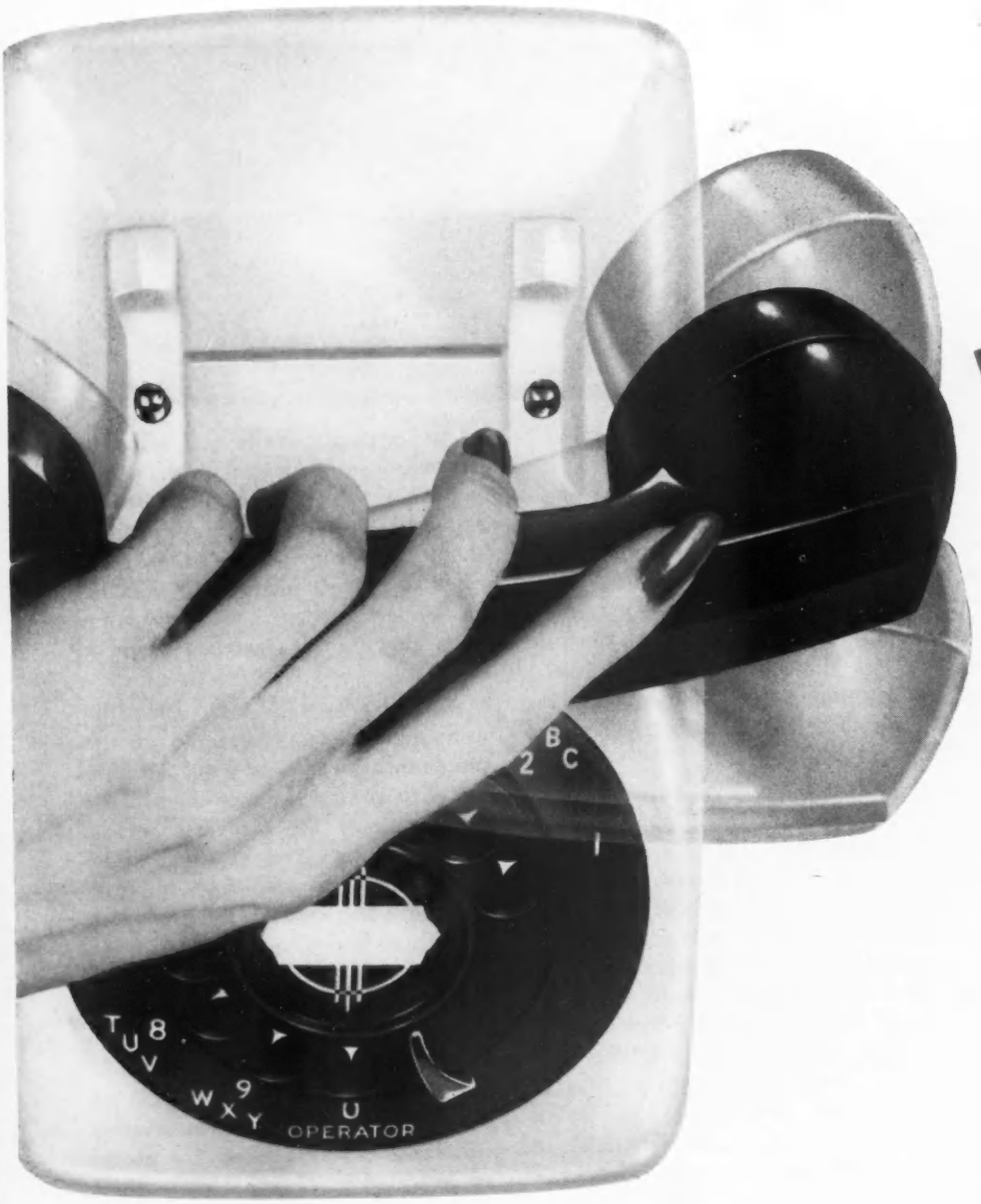
An older method of keeping the lashing wire off the cable at the points mentioned is to wrap the lashing wire around the messenger alone and terminate the wire just beyond the suspension clamp at a pole or by splicing two wire ends from opposite directions at a splice. This procedure is still standard with some companies, though it is considered to require more time than placing lashing wire clamps.

In the "open" method of supporting cable and terminating lashing wire at poles, lashed cable supports and lashing wire clamps are placed as indicated in *Figure* 242. In some cases, where greater clearance from the messenger at the pole is needed, aerial type supports are employed in

ALMOST ANY WAY

YOU PUT IT...

RIGHT INTO



THE CRADLE IT GOES!

It's Automatic's famous "Walking Handset", one of the most popular features of the Type 80 Monophone. This distinctive telephone is shaped so the handset just "walks" right into place.

Which practically eliminates "off-hook" complaints—and thereby saves a great many maintenance trips.

We suggest you talk to a man who's standardized on Type 80 Monophones and ask him how many trips it saves *him*. Ask him about Type 80's *low* maintenance, too, and about its time-saving, easily-accessible parts, and its temper-saving Installer's Hooklock. And don't forget to inquire how his subscribers like Type 80's smart styling, easy dialing, and lifelike transmission. You'll see why so many telephone men are buying Automatic's Type 80 Monophone!

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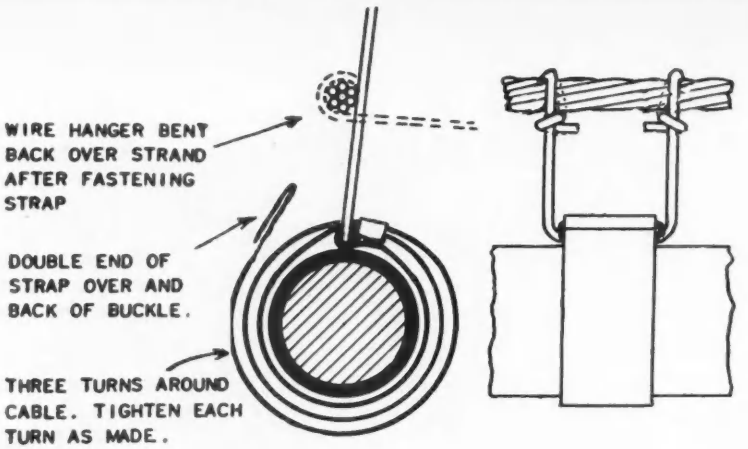
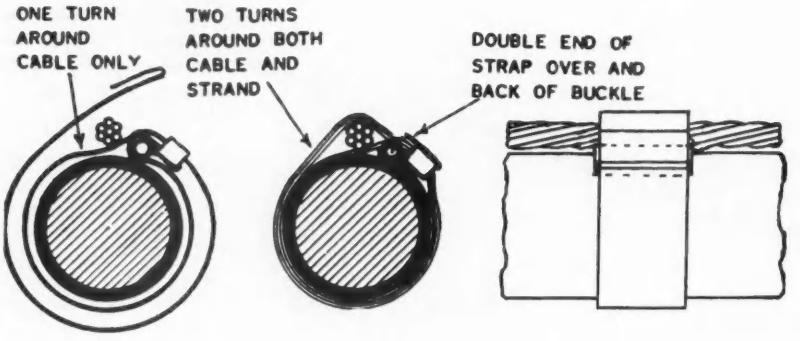
ORIGINATORS OF THE DIAL TELEPHONE


WIRE HANGER BENT BACK OVER STRAND AFTER FASTENING STRAP
DOUBLE END OF STRAP OVER AND BACK OF BUCKLE.
THREE TURNS AROUND CABLE. TIGHTEN EACH TURN AS MADE.



Aerial or Lashed Support Number	Length of Strap	MAXIMUM Diameter of Cable or Sleeve Lashed Support on Cable*	Lashed Support on Sleeve	Aerial Support on Cable*	Aerial Support on Sleeve	MAXIMUM Circumference over Sleeve or Combination of Cables Over Sleeve and Strand-Lashed Support	Over Combination of Cables-Aerial Support
1	10"	3/4"	3/4"	3/4"	3/4"	3 3/8"	2 5/16"
2	16"	1 5/16"	1 1/4"	1 3/16"	1 1/4"	5 3/8"	3 5/8"
3	22"	1 7/8"	1 3/4"	2"	2"	7 3/8"	6 5/16"
4	28"	2 3/8"	2 1/4"	2 5/8"	2 1/2"	9 3/8"	8 5/16"
5	34"	2 5/8"	2 1/2"	3 1/8"	3"	11 3/8"	10"
6	50"	------	4 1/2"	------	5"	17"	15"
7	64"	------	6"	------	6 1/2"	21 3/8"	20 1/2"

*If lead shield is used with the support, add 3/16" to diameter of cable to allow for thickness of shield.

FIG 234:—Method of assembling aerial type cable supports (above) and lashed cable supports (below) without spacer. The table shows sizes of supports and lengths of straps for various sizes and combinations of cables and sleeves.

place of the lashed cable supports and spacers, and cable supports with 1/4 inch spacer are installed 20 inches away from the aerial support on each side of the pole. In either case, lashing wire clamps are utilized to terminate the lashing wire on the messenger as illustrated. *Figure* 243 depicts the terminating method when a corner pole with pull over 15 feet is involved, the cable being also protected by a cable shield fastened on the cable as indicated.

Another technique of terminating the lashing wire on corner poles is indicated in *Figures* 244 *and* 245. In this case the lashing wire is spiraled over the messenger alone, up to the suspension clamp where it is terminated by wrapping the end in six tight turns bearing against the far end of the suspension clamp.

Terminating Lashing Wire At Cable Splices

SINCE CABLE splices are quite heavy and rigid in comparison with the smaller diameter cable adjoining the splice, spiraling the lashing wire around the splice will not securely hold it in position. In this case, lashed cable supports should be placed to carry the splice, and the cable near the splice ends should be secured with aerial type cable supports or lashed cable supports with spacers of the proper size. Two lashed cable supports should be used on the splice, one near each end within one inch of the inner edge of the wiped joint.

This supporting method is illustrated in *Figure* 246. The lashing wire is terminated on a lashing wire clamp a short distance away at each end of the splice. A variation of this method is to wrap the lashing wire around the messenger alone and pigtail together the wire ends at the center of the splice, as shown in *Figure* 247.

Where the cable splice is located within ten feet of the pole, lashed cable supports are placed 20 inches apart up to the pole and past it, the last support being 10 inches beyond the through bolt of the suspension

clamp. The lashing wire is kept off the cable in this space. For splices at poles, the closed methods for pole and strand mounted terminals are illustrated in *Figures* 248 *and* 249. *Figure* 250 depicts the open method of supporting a cable stub splice for a strand mounted terminal.

Splicing Lashing Wire

MENTION has been made before of ways in which splices may be made in lashing wire. Other methods are described here. The important thing in splicing lashing wire is to keep the wire under tension by means of clamping tools while the splice is being made.

In the spinning procedure, splices in the lashing wire are most conveniently made by means of short compression sleeves specially designed for this purpose. One compression is made on each end of the sleeve with a regular compressing tool. Care should be taken to locate the sleeve so that it will not bear directly on the cable sheath when the wire is spiraled around the cable and strand.

In the case of lashing wire that is under tension from two directions, twist the ends into a pigtail and tuck the pigtail down out of the way. If the ends are too short for this method, as when the wire breaks, piece out one end by splicing a short length of

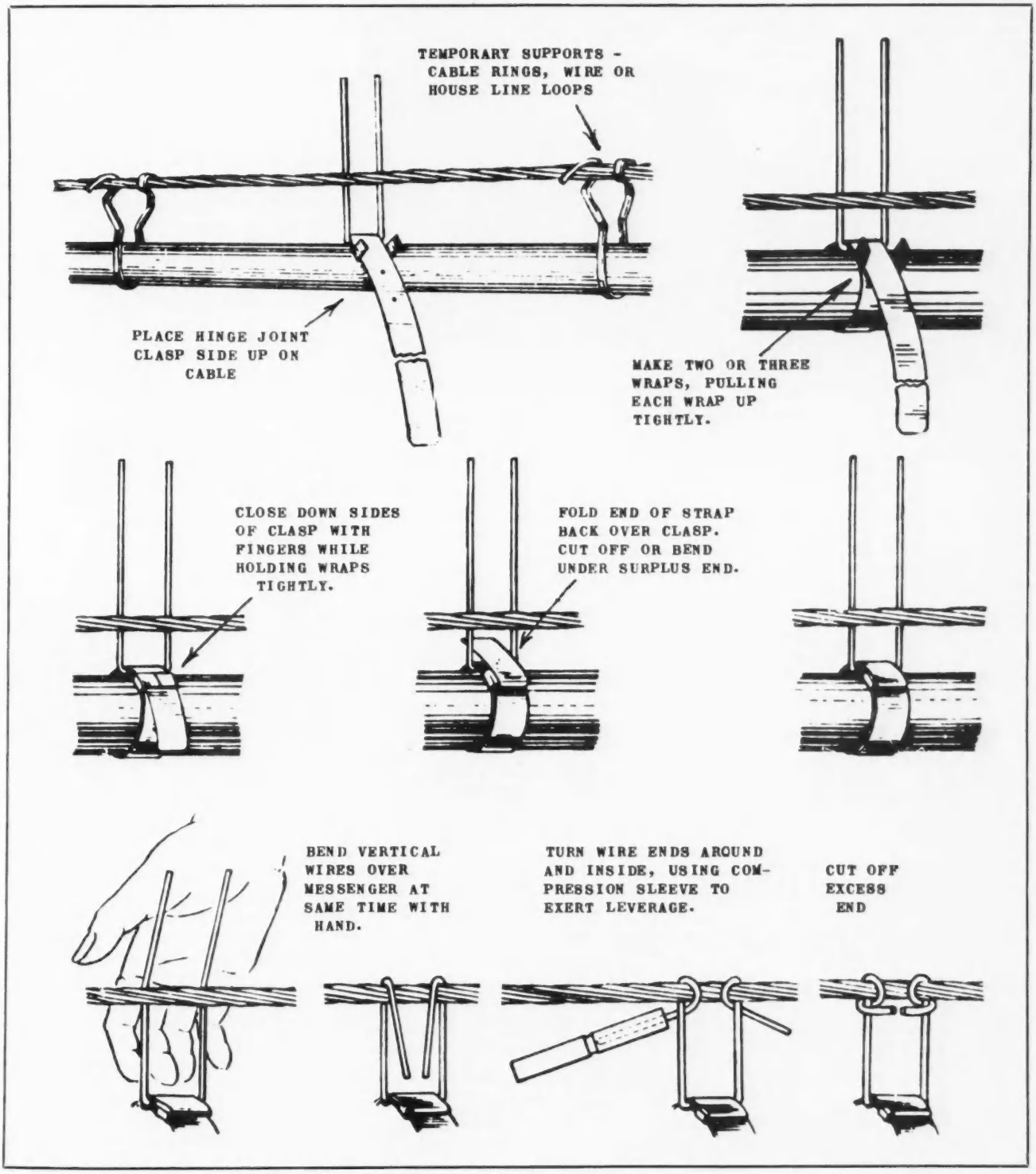

TEMPORARY SUPPORTS - CABLE RINGS, WIRE OR HOUSE LINE LOOPS
PLACE HINGE JOINT CLASP SIDE UP ON CABLE
MAKE TWO OR THREE WRAPS, PULLING EACH WRAP UP TIGHTLY.
CLOSE DOWN SIDES OF CLASP WITH FINGERS WHILE HOLDING WRAPS TIGHTLY.
FOLD END OF STRAP BACK OVER CLASP. CUT OFF OR BEND UNDER SURPLUS END.
BEND VERTICAL WIRES OVER MESSENGER AT SAME TIME WITH HAND.
TURN WIRE ENDS AROUND AND INSIDE, USING COMPRESSION SLEEVE TO EXERT LEVERAGE.
CUT OFF EXCESS END

FIG. 235:—Method of assembling National Adjust-A-Strap aerial cable support on cable and attaching to messenger.

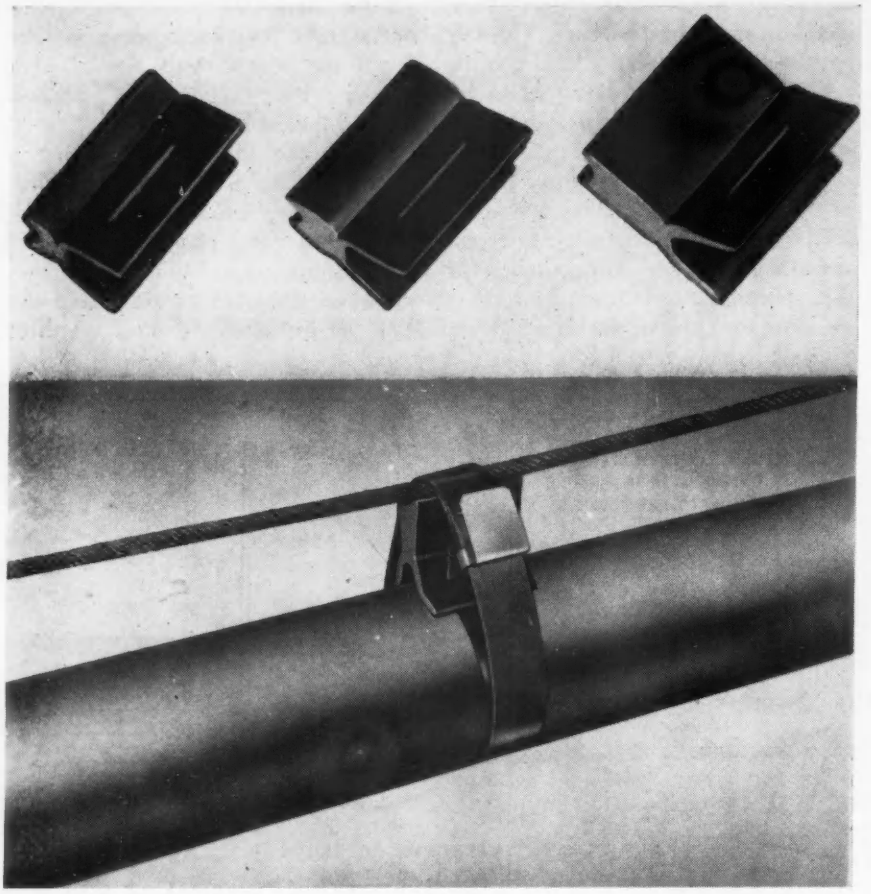
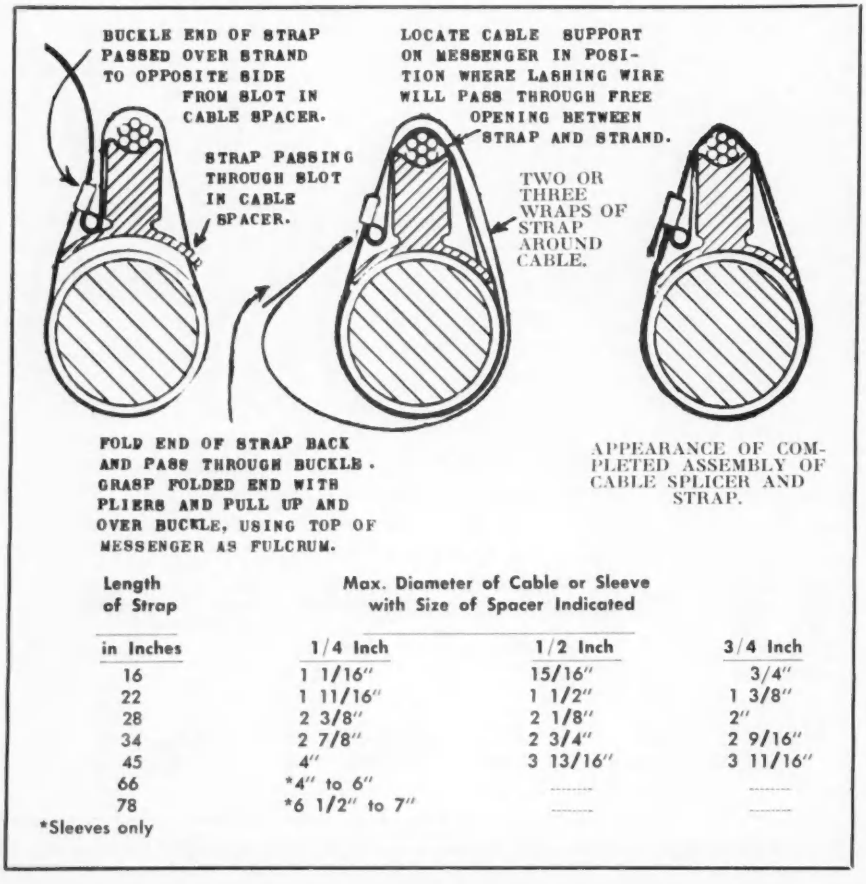


FIG. 236:—General Machine Products Company "B" cable spacers and "B" Lashed Cable Support. The cable spacers (top) are available in the ¼", ½", and ¾" sizes shown from left to right. The strap is of corrosion resistant steel and is available in lengths from 16 to 78 inches.


BUCKLE END OF STRAP PASSED OVER STRAND TO OPPOSITE SIDE FROM SLOT IN CABLE SPACER.
LOCATE CABLE SUPPORT ON MESSENGER IN POSITION WHERE LASHING WIRE WILL PASS THROUGH FREE OPENING BETWEEN STRAP AND STRAND.
STRAP PASSING THROUGH SLOT IN CABLE SPACER.
TWO OR THREE WRAPS OF STRAP AROUND CABLE.
FOLD END OF STRAP BACK AND PASS THROUGH BUCKLE. GRASP FOLDED END WITH PLIERS AND PULL UP AND OVER BUCKLE, USING TOP OF MESSENGER AS FULCRUM.
APPEARANCE OF COMPLETED ASSEMBLY OF CABLE SPLICER AND STRAP.

Length of Strap	Max. Diameter of Cable or Sleeve with Size of Spacer Indicated		
in Inches	1/4 Inch	1/2 Inch	3/4 Inch
16	1 1/16"	15/16"	3/4"
22	1 11/16"	1 1/2"	1 3/8"
28	2 3/8"	2 1/8"	2"
34	2 7/8"	2 3/4"	2 9/16"
45	4"	3 13/16"	3 11/16"
66	*4" to 6"	------	------
78	*6 1/2" to 7"	------	------

*Sleeves only

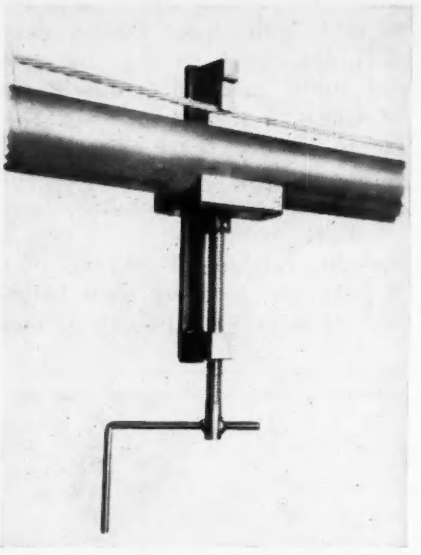


FIG. 238:—General Machine Products Company "C" Cable Lifter for adjusting spacing between messenger and cable while placing cable supports.

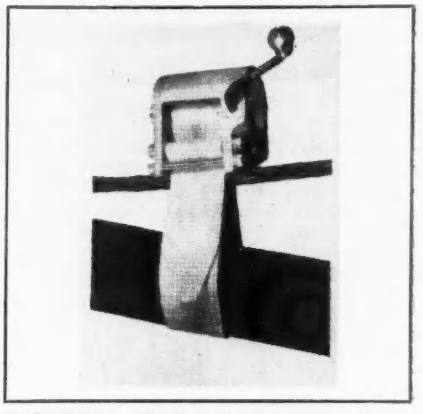


FIG. 239:—Neale CL29 Power Strap for raising cable to termination of spinning wire.

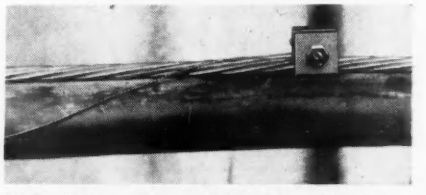


FIG. 240:—General Machine Products Company Lashing Wire Clamp used for terminating lashing wire on messenger clamp consists of pair of grooved plates and a threaded stud with flanged shoulder, two hexagonal nuts, and washer. The nut on the long end of the stud tightens the clamp on the messenger, and the nut on the short end holds the lashing wire between the washer and flanged shoulder.

FIG. 237 (Left):—Method of assembling "B" cable spacer and lashed cable support on cable and messenger. The procedure indicated enables a tight wrap to be obtained without damaging the cable. The end of the last wrap is cinched over the buckle by exerting leverage on the strand with the pliers and forcing the folded end back over the buckle.

wire to it with a compression sleeve and then pigtail the pieced out wire to the other lashing wire.

Where there is sufficient space between the cable and the strand so that the cable will not come into contact with the splice, pull up one end of the wire and wind 6 turns on the strand with it. Pull up the other end and wind 6 turns of this end on the strand just beyond and close to the wound layer of the first wire. In this manner the ends of the wires will pull on each other and prevent either wire from slipping along the strand and releasing the tension.

A more recent idea is to employ a lashing wire clamp to terminate the ends of lashing wire from both directions, in effect splicing them together. The clamp is tightly locked on the messenger. One wire end is hooked over the threaded stud, between the shoulder in the stud and the washer, and the other wire end is placed over the stud, between the washer and nut. Tightening the nut then will clamp both wire ends.

Mechanical Protection Of Lashed Cable

TREES ALONG a cable lead are likely to cause damage to the cable when the trunk or any limb or branch of a tree is in direct contact with the cable, or when movement of any part of a tree in the wind will cause contact with or transmit vibration to the cable. Other obstructions such as poles or guys may result in damage to cable.

One or more of the following protection methods may be employed, if permanent clearance can be obtained in an economical manner:

(a) Raising or lowering the cable at adjacent poles (observing proper ground and wire clearances).

(b) Lateral shifting of the cable's position by pulling off to large limb, (*Figure* 251), raking adjacent poles (except jointly used poles and never more than a few inches), placing cable extension arms at adjacent poles, and placing cable guards.

When none of the foregoing methods is practicable, the tree should be trimmed or wood molding utilized to protect the cable.

In general, the use of molding should be restricted to those locations, where clearance can be obtained by no practicable means other

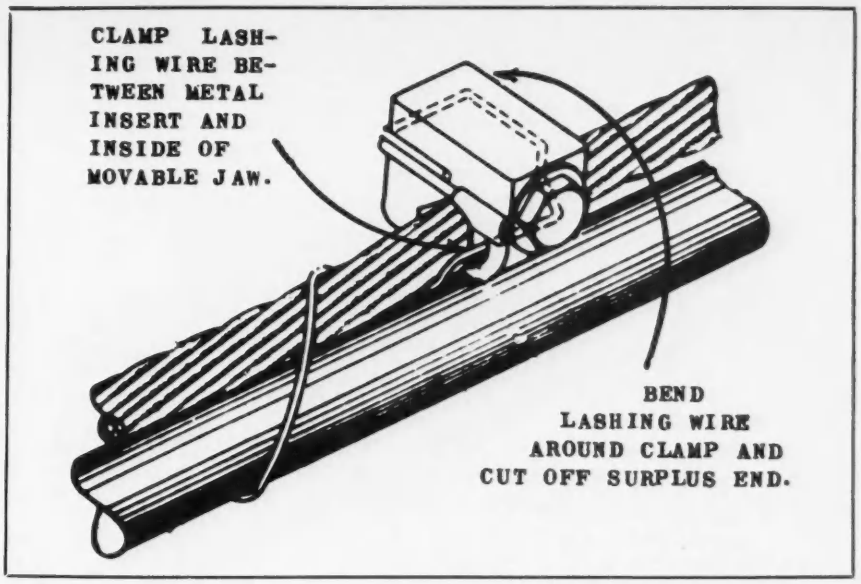

CLAMP LASHING WIRE BETWEEN METAL INSERT AND INSIDE OF MOVABLE JAW.
BEND LASHING WIRE AROUND CLAMP AND CUT OFF SURPLUS END.

FIG. 241:—Fargo B-3 Lashing Wire Clamp

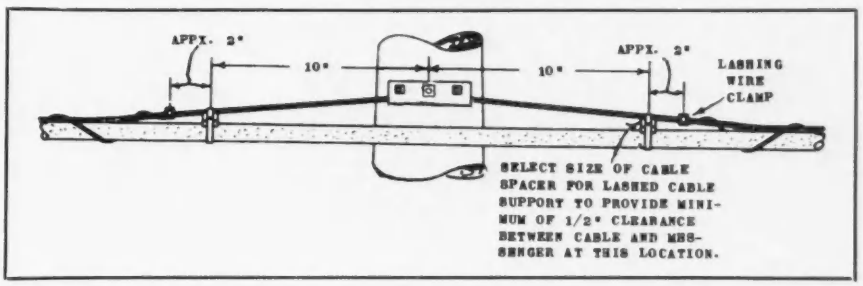

APPX. 2"
10"
10"
APPX. 2"
LASHING WIRE CLAMP
SELECT SIZE OF CABLE SPACER FOR LASHED CABLE SUPPORT TO PROVIDE MINIMUM OF 1/2" CLEARANCE BETWEEN CABLE AND MESSENGER AT THIS LOCATION.

FIG. 242:—"Open" method of terminating lashing wire at pole in straight sections of line.

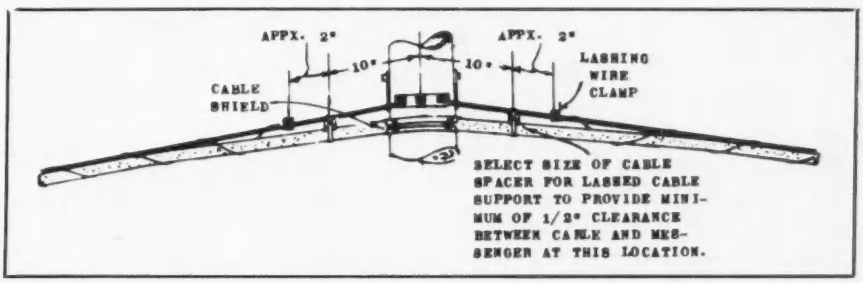

APPX. 2"
10"
10"
APPX. 2"
LASHING WIRE CLAMP
CABLE SHIELD
SELECT SIZE OF CABLE SPACER FOR LASHED CABLE SUPPORT TO PROVIDE MINIMUM OF 1/2" CLEARANCE BETWEEN CABLE AND MESSENGER AT THIS LOCATION.

FIG. 243:—"Open" method of terminating lashing wire at corner pole with pull over 15 feet.

MODERN CABLE CONSTRUCTION

By John S. Reed

Now in its second year of publication, with Chapter IX scheduled for the March issues of "Telephone Engineer & Management," John Reed's discussion of "Modern Cable Construction Methods," has proved in as one of the most helpful of all "TE&M" features. Written as a Training Course with review questions at the end of each chapter, the articles are studied and referred to by thousands of telephone industry members.

Nice things get noticed

The ladies across the page are doing something very feminine—getting a good idea from someone else's home. The idea? How convenient additional telephones around the house can be, and how decorative they are in color. You'll find their conversation reported in a Bell System advertisement which is running this month in the following national women's magazines:

American Home	**Household**
Better Homes and Gardens	**Ladies' Home Journal**
Family Circle	**McCall's**
Good Housekeeping	**Parents' Woman's Day**

In 1957, six ads like this will appear in the above nine magazines, and it is estimated that they will reach 18,728,000 women in America.

This is a campaign designed to acquaint housewives with the latest in telephone styles and conveniences. It is intended to make them aware of the telephone's value and stimulate sales of additional telephones and equipment for the entire telephone industry.

BELL TELEPHONE SYSTEM

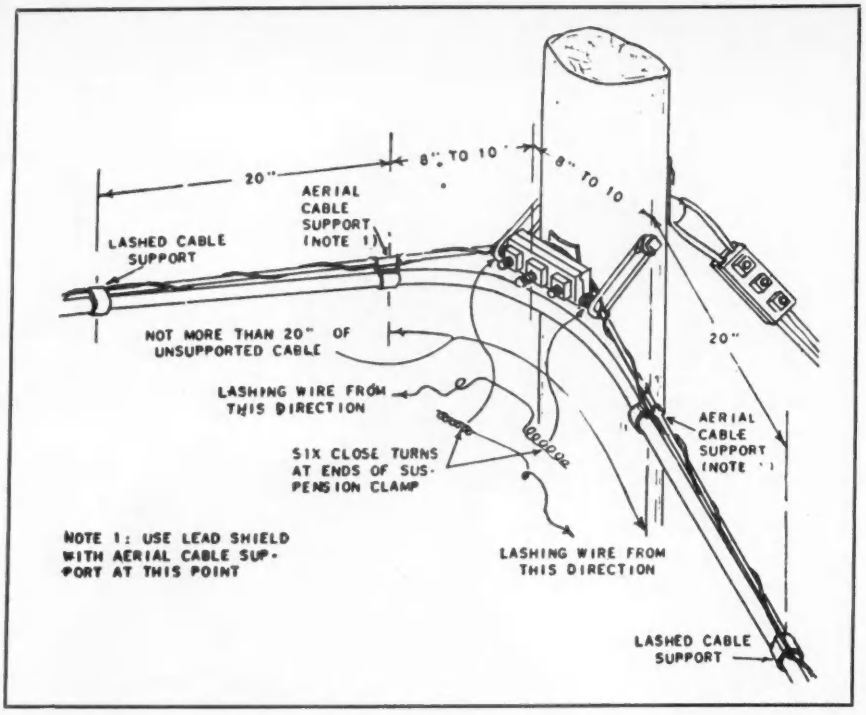

20"
AERIAL CABLE SUPPORT (NOTE 1)
8" TO 10"
8" TO 10"
LASHED CABLE SUPPORT
NOT MORE THAN 20" OF UNSUPPORTED CABLE
20"
LASHING WIRE FROM THIS DIRECTION
AERIAL CABLE SUPPORT (NOTE 1)
SIX CLOSE TURNS AT ENDS OF SUSPENSION CLAMP
NOTE 1: USE LEAD SHIELD WITH AERIAL CABLE SUPPORT AT THIS POINT
LASHING WIRE FROM THIS DIRECTION
LASHED CABLE SUPPORT

FIG. 244:—Variation in method of terminating lashing wire at corner pole. Lashing wire is spiralled over messenger alone and terminated at far end of suspension clamp.

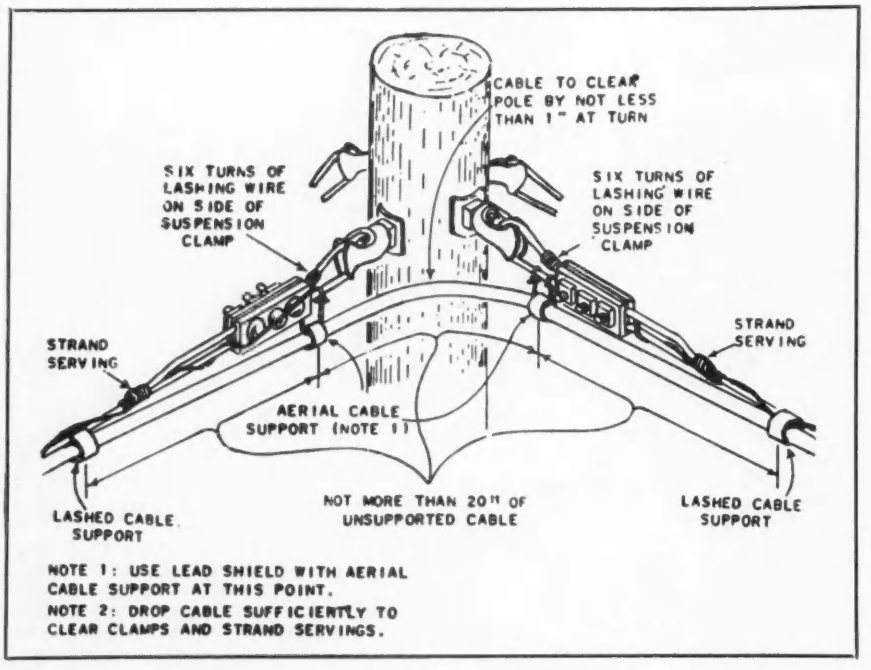

CABLE TO CLEAR POLE BY NOT LESS THAN 1" AT TURN
SIX TURNS OF LASHING WIRE ON SIDE OF SUSPENSION CLAMP
SIX TURNS OF LASHING WIRE ON SIDE OF SUSPENSION CLAMP
STRAND SERVING
STRAND SERVING
AERIAL CABLE SUPPORT (NOTE 1)
LASHED CABLE SUPPORT
NOT MORE THAN 20" OF UNSUPPORTED CABLE
LASHED CABLE SUPPORT
NOTE 1: USE LEAD SHIELD WITH AERIAL CABLE SUPPORT AT THIS POINT.
NOTE 2: DROP CABLE SUFFICIENTLY TO CLEAR CLAMPS AND STRAND SERVINGS.

FIG. 245:—Use of aerial cable supports and lashed supports without spacers in carrying cable around and inside a dead ended corner pole.

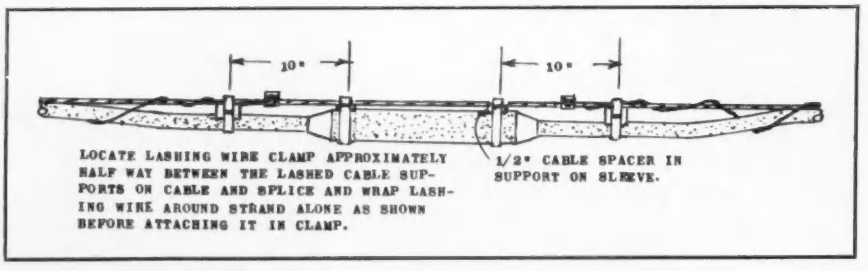

10"
10"
LOCATE LASHING WIRE CLAMP APPROXIMATELY HALF WAY BETWEEN THE LASHED CABLE SUPPORTS ON CABLE AND SPLICE AND WRAP LASHING WIRE AROUND STRAND ALONE AS SHOWN BEFORE ATTACHING IT IN CLAMP.
1/2" CABLE SPACER IN SUPPORT ON SLEEVE.

FIG. 246;—"Open" method of supporting cable with splice in span.

than extensive trimming of trees and when the expense of such pruning during the expected life of molding would be more than the cost of molding, and to those locations where pruning would seriously mar the appearance of ornamental trees or where permission to prune is not granted. In determining whether to trim the trees or use wood molding, the following factors should be considered:

(a) Young trees grow faster than old ones and soft wood trees grow more rapidly than hard wood varieties.

(b) The prevailing growth of trees is upward and outward.

(c) Growth underneath, or in the center of a tree, is slow and less apt to be damaging.

(d) Pruning stimulates growth adjacent to the cut.

Use of Cable Molding

THE AMOUNT of molding to be placed will depend, first, upon the present requirement, which should extend three feet beyond the outmost interfering portion of the tree; and, second, upon adjacent growth that will interfere within two years. Figure 252 illustrates the use of the molding.

Before any molding is placed, the cable sheath should be carefully examined for ring cuts, cracks, and punctures. All abrasions that may develop trouble should be sealed before the molding is placed.

Cable molding is supplied in eight-foot sections, consisting of two-half rounds, which are fitted together around the cable. A sufficient amount of molding is placed to provide at least 36 inches of protection beyond

Several of Miss Richards articles have been reprinted as a 100-page book titled—"A Guide To Effective Traffic Management Methods." Copies of this attractive, illustrated book are available at $3.00 per copy. Order from Readers' Service Dept., TE&M, 7720 N. Sheridan Rd., Chicago 26, Ill.

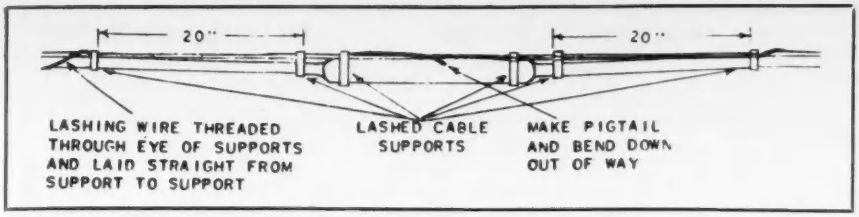

20"
20"
LASHING WIRE THREADED THROUGH EYE OF SUPPORTS AND LAID STRAIGHT FROM SUPPORT TO SUPPORT
LASHED CABLE SUPPORTS
MAKE PIGTAIL AND BEND DOWN OUT OF WAY

FIG. 247.—"Closed" method of supporting cable with splice in span.

the outmost interfering tree limb. The sizes of molding to use for different sizes of cable are indicated below:

Size of Molding	Largest Size that can be Covered by Molding: Cable Only PR.	Cable Only GA.	Cable and Strand Together PR.	Cable and Strand Together GA.
3/4"	25	22	-----	-----
	50	24	-----	-----
1 1/4"	50	19	25	19
	100	22	50	22
	200	24	100	24
2"	200	19	100	19
	400	22	200	22
	600	24	400	24
2 11/16"	450	19	300	19
	900	22	600	22
	1200	24	900	24

When more than eight feet of cable is to be covered, the half rounds should be staggered to locate the joints four feet apart on the cable, as indicated in *Figure* 253, thus obtaining a rigid assembly.

In lashing new cable, and it is necessary to use cable molding, place a full length half round on the top of the cable, between the latter and the strand. Then, while holding a half section of another half round in position, operate the lashing machine to spin wire around the molding. Place additional half rounds, as required, until the end of the sec-

BOOKS

In answer to the requests of many readers we have reprinted L. A. Hodson's articles on *"The Independent Company and Nationwide Toll Dialing."* A booklet containing the entire series (six sections) is available. Cost of the booklet is 75¢ per copy. Send orders direct to *Reader's Service Dept., Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.*

"Rebuilding The Rural Outside Plant" by John S. Reed. Price $1.50.

In this 70-page book Mr. Reed takes the rebuilding job from the inspection to determine necessary work, through active construction of the plant. Each phase of the work is described and illustrated. Send your order to *Reader's Service Dept., Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Ill.*

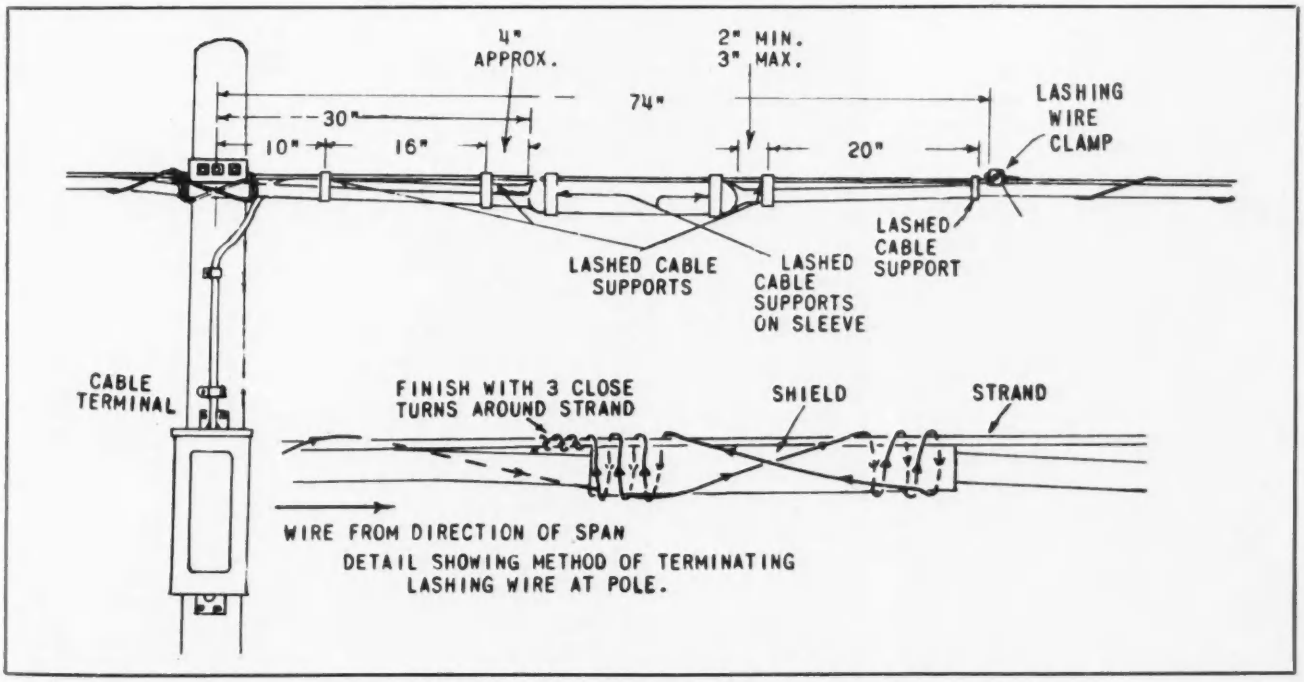


FIG. 248:—Supporting cable splice near pole using lashed cable supports at splice and lead shield on cable at suspension clamp on pole (pole mounted terminal).

tion to be protected is approached, then place the remaining half section of half round in position and finish the lashing operation.

In the case of existing ring cable and molding already in place, remove the wire ties attaching the cable molding to cable rings in the section covered by the molding. Operate the lashing machine to spin the molding and cable together to the strand, removing the supporting rings as the machine proceeds.

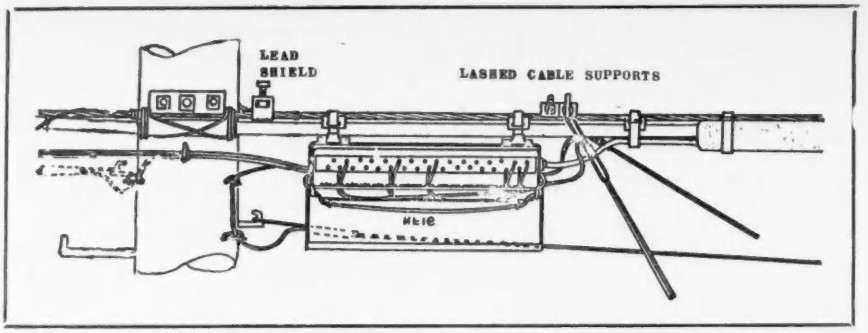


FIG. 249:—"Closed" method of supporting cable with stub splice for strand mounted terminal.

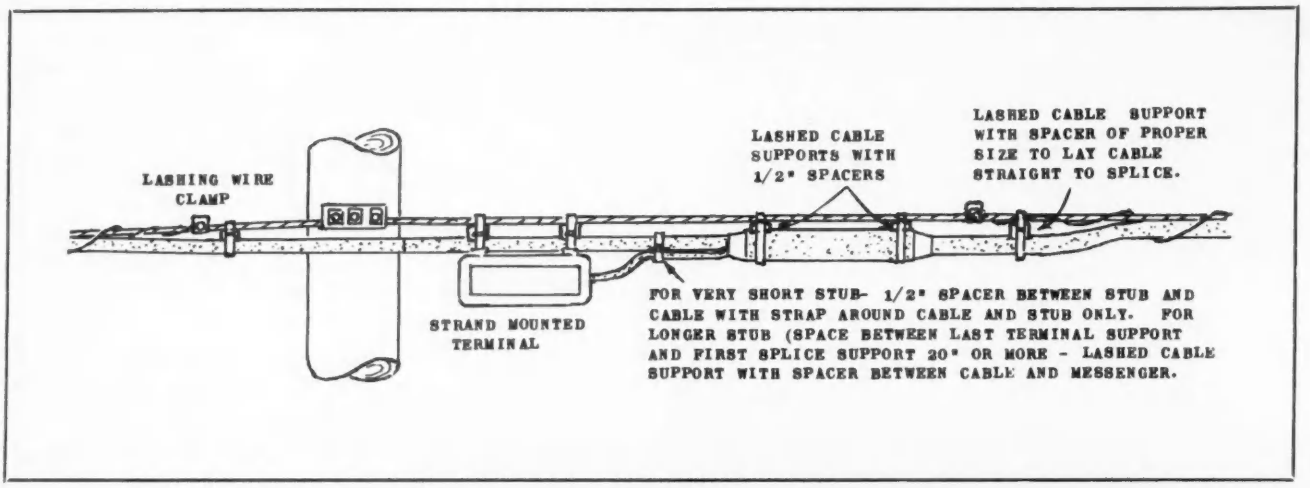

LASHING WIRE CLAMP
LASHED CABLE SUPPORTS WITH 1/2" SPACERS
LASHED CABLE SUPPORT WITH SPACER OF PROPER SIZE TO LAY CABLE STRAIGHT TO SPLICE.
STRAND MOUNTED TERMINAL
FOR VERY SHORT STUB- 1/2" SPACER BETWEEN STUB AND CABLE WITH STRAP AROUND CABLE AND STUB ONLY. FOR LONGER STUB (SPACE BETWEEN LAST TERMINAL SUPPORT AND FIRST SPLICE SUPPORT 20" OR MORE - LASHED CABLE SUPPORT WITH SPACER BETWEEN CABLE AND MESSENGER.

FIG. 250:—"Open" method of supporting cable stub splice for strand mounted terminal.

When spinning existing cable and it is desired to place molding, push the half rounds through the rings at the proper location and then lash the molding and the cable together to the strand, as previously explained.

If it is desired to place cable molding on cable already spun in place, select a size of molding that will go over both the cable and the strand,

FIG. 252:—Use of cable molding to protect cable passing through a tree.

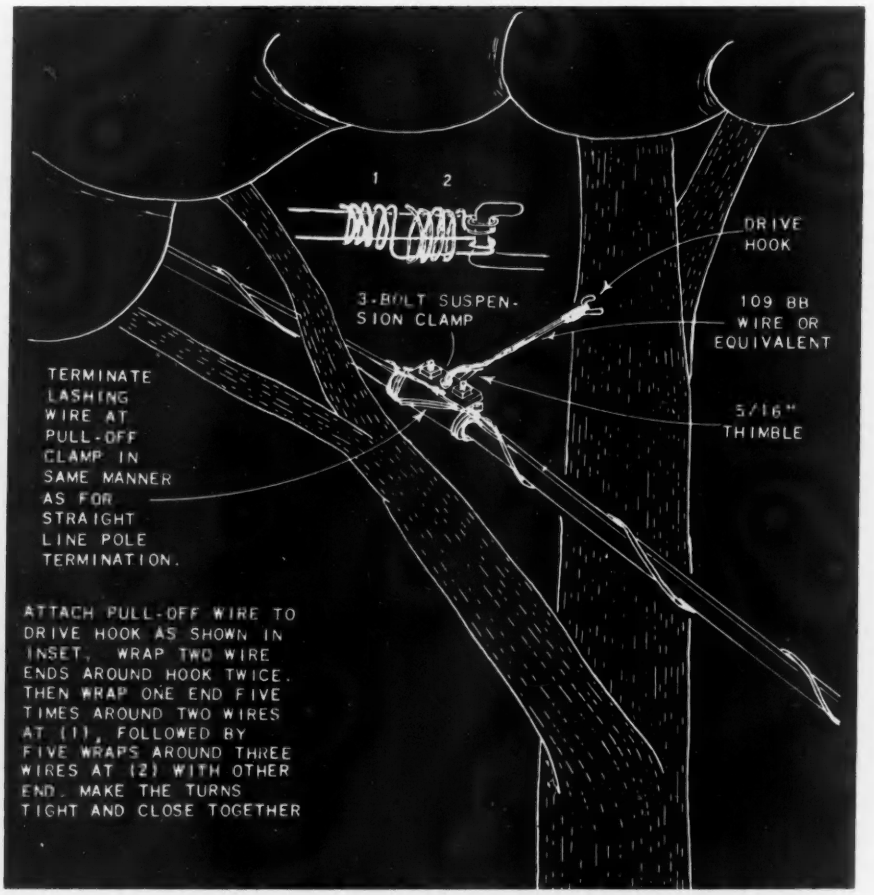

1
2
DRIVE HOOK
3-BOLT SUSPENSION CLAMP
109 BH WIRE OR EQUIVALENT
5/16" THIMBLE
TERMINATE LASHING WIRE AT PULL-OFF CLAMP IN SAME MANNER AS FOR STRAIGHT LINE POLE TERMINATION.
ATTACH PULL-OFF WIRE TO DRIVE HOOK AS SHOWN IN INSET. WRAP TWO WIRE ENDS AROUND HOOK TWICE. THEN WRAP ONE END FIVE TIMES AROUND TWO WIRES AT (1), FOLLOWED BY FIVE WRAPS AROUND THREE WIRES AT (2) WITH OTHER END. MAKE THE TURNS TIGHT AND CLOSE TOGETHER

FIG. 251:—Method of making pull-off to prevent abrasion of cable on tree limb.

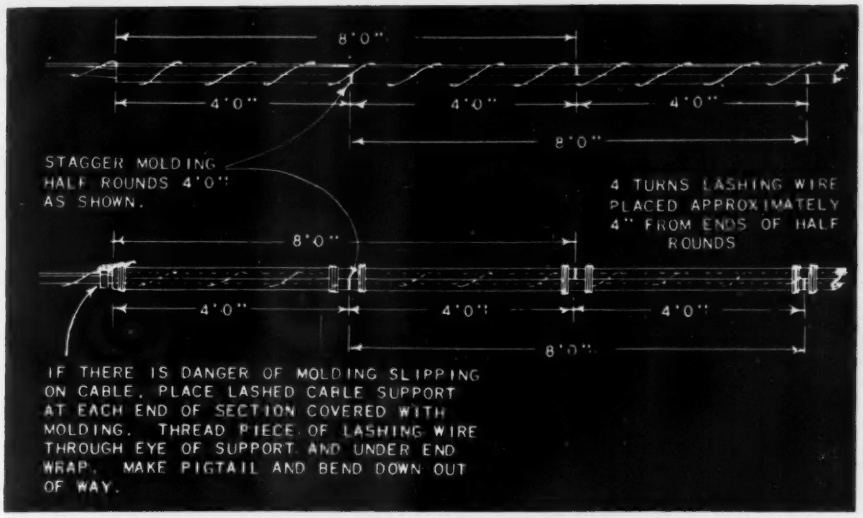

8'0"
4'0"
4'0"
4'0"
8'0"
STAGGER MOLDING HALF ROUNDS 4'0" AS SHOWN.
4 TURNS LASHING WIRE PLACED APPROXIMATELY 4" FROM ENDS OF HALF ROUNDS
8'0"
4'0"
4'0"
4'0"
8'0"
IF THERE IS DANGER OF MOLDING SLIPPING ON CABLE, PLACE LASHED CABLE SUPPORT AT EACH END OF SECTION COVERED WITH MOLDING. THREAD PIECE OF LASHING WIRE THROUGH EYE OF SUPPORT AND UNDER END WRAP. MAKE PIGTAIL AND BEND DOWN OUT OF WAY.

FIG. 253:—Method of assembling cable molding on lashed cable. Upper view—Molding assembled at time cable is lashed to messenger. Lower view — Cable molding assembled over both cable and messenger.

as indicated in the table. Place the half rounds over the cable and strand and wrap the molding with four turns of lashing wire on each side of the joints as shown in Figure 253.

Channell Lashing Method

METHODS of supporting cable on the messenger strand by means of lashing machines designed for the purpose have been described. There is available a practical method of lashing cable which uses precoiled lashing wire. This technique was developed by the Channell Cable Splicing Machine Company. This wire is made in spring coils of 21 inch lengths for 300 foot spans of cable. They can be cut to length on the job, generally seven inches for a 100 foot span. (Other lengths are available and may be ordered special for this purpose.)

As shown in *Figure* 254, one spring coil is tied to the suspension clamp of each pole. The messenger strand is threaded through the clamp and the coils. If the messenger is already in place the spring coil can be threaded onto the strand by inserting one end of the coil over the strand and turning the coil until all of it is wound onto the messenger.

Where Channell strand mounted terminals are employed, these terminals are placed on the strand with the pulling line threaded through the terminal and the spring coils. After the messenger is pulled up and fastened in place in the suspension clamps the coils are attached to the messenger strand with lashing wire clamps to hold them in position as illustrated.

The cable is secured to the end of the spring coil and to the pulling line so that when the line is pulled the cable and the coil will move together along the messenger, causing the spirals to stretch out. A wire loop, snap, or roller is employed on the pulling grip to hold up this end in the pulling operation.

The end of the stretched out coil is fastened to the messenger about 40 inches away from the next pole without pulling up the slack in the coil. Each of the following spans is treated in the same way. This results in every span having a stretched out coil on the messenger supporting the cable, eliminating the need for temporary supports required in other methods.

On completion of the pulling operation, sufficient slack is pulled out in the cable at each terminal for looping and for connecting in the terminal.

Starting at the cable reel end, each span is vibrated by pounding with the hand. At the same time, the spring coil slack is pulled up to tighten the spirals of lashing wire around the cable. The free end of the wire is fastened to the messenger with a lashing wire clamp and the surplus wire is afterwards cut off.

This method is claimed to provide a tight binding for the cable in each span and to have the advantage of being a simple operation requiring

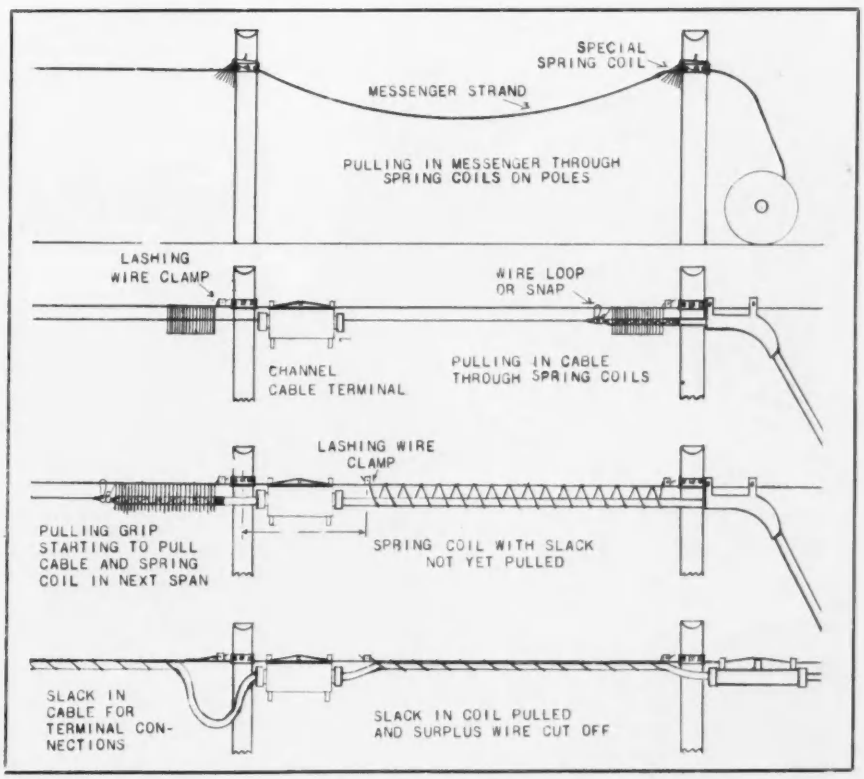

SPECIAL SPRING COIL
MESSENGER STRAND
PULLING IN MESSENGER THROUGH SPRING COILS ON POLES
LASHING WIRE CLAMP
WIRE LOOP OR SNAP
CHANNEL CABLE TERMINAL
PULLING IN CABLE THROUGH SPRING COILS
LASHING WIRE CLAMP
PULLING GRIP STARTING TO PULL CABLE AND SPRING COIL IN NEXT SPAN
SPRING COIL WITH SLACK NOT YET PULLED
SLACK IN CABLE FOR TERMINAL CONNECTIONS
SLACK IN COIL PULLED AND SURPLUS WIRE CUT OFF

FIG 254:—Channell cable lashing method using special spring coils. First Step above — Pulling messenger strand through spinning coils. Second Step — Pulling in cable through spring coils to stretch out spirals. Third Step — Cable has reached next pole and is about to enter the next span section. Note spring coil extended to within 40 inches of next pole. Fourth Step — Slack in coil has been pulled up and cable now is securely lashed to the messenger.

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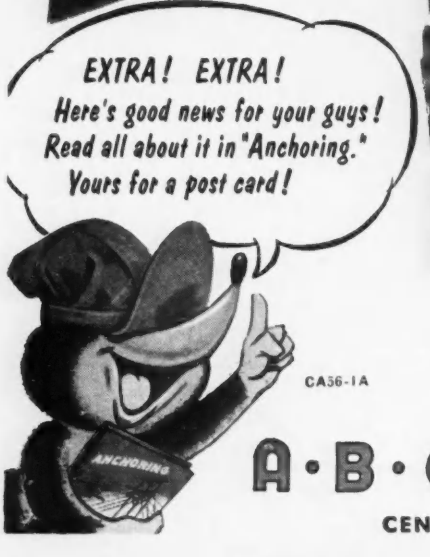

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no machine. It would be quite useful for small cable lashing jobs.—*To Be Continued.*

Questions

Questions on Parts VII and VIII:—Methods of Supporting Aerial Cable; Characteristics of Factory-Assembled Messenger-Supported Aerial Cable; Method of Installing Factory-Assembled Messenger-Supported Aerial Cable; Uses of Factory-Assembled Messenger-Supported Aerial Cable; Field Spinning of Telephone Cable; Kinds and Sizes of Spinning Wire Used in Cable Spinners; Tensioning the Cable Prior to Spinning; Precautions to assure Tight Lashing of Cable; Cable Lashing Operations Using Straight Lashing and Temporary Ring Methods; Cable Lashing with Aerial Cable Block Conveyors; Tensioning Cable and Messenger Arrangement on Prelasher; Use of Cable Blocks on Poles — Cable Leader; Operation of the Prelashing Equipment; Transferring Messenger with Cable to Permanent Support; Tension Factors in Terminating Lashing Wire; Methods of Supporting and Shielding Cable at Localized Tension and Friction Points; Terminating Lashing Wire at Cable Splices; Splicing Lashing Wire; Mechanical Protection of Lashed Cable; Use of Cable Molding; Channell Lashing Method.

(1) Describe the features of the factory-assembled messenger-supported aerial cable. What is the installing method for this type of cable?

(2) Explain the construction and operation of the standard models of Neale Cable Spinner.

(3) What are the sizes and kinds of spinning or lashing wire available?

(4) Describe a typical cable spinning operation with the Neale Spinner. Why is proper tensioning of the cable so important?

(5) Point out the features of the General Cable Corporation cable lashers.

(6) Explain the several cable lashing methods in present use.

(7) What equipment is needed for prelashing of telephone cable? Explain the tensioning arrangement on the prelashing machine.

(8) Explain the effect of improper lashing wire terminating methods on lashed cable.

(9) Describe the difference between the so-called "open" and

"closed" methods of terminating lashing wire. How would you splice lashing wire?

(10) Describe the methods of protecting lashed cable from mechanical damage.

Book Review

"Modern Mathematics For The Engineer," edited by Edwin F. Beckenbach; 514 pages; University of California Engineering Extension Series; $7.50; McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y.

The book is divided into three parts:

The first, entitled "Mathematical Models," dwells succesively on physical problems expressed in terms of ordinary differential equations, integral equations, and partial differential equations.

Next, in "Probabilistic Problems" are chapters bearing on the programming and operational aspects of engineering and on the use of probabilistic methods in solving problems.

Finally, in "Computational Considerations" the emphasis is frankly on numerical solutions; the concluding chapter deals with aspects of high-speed computing devices.

"'I do' — Now it's your turn, dear."

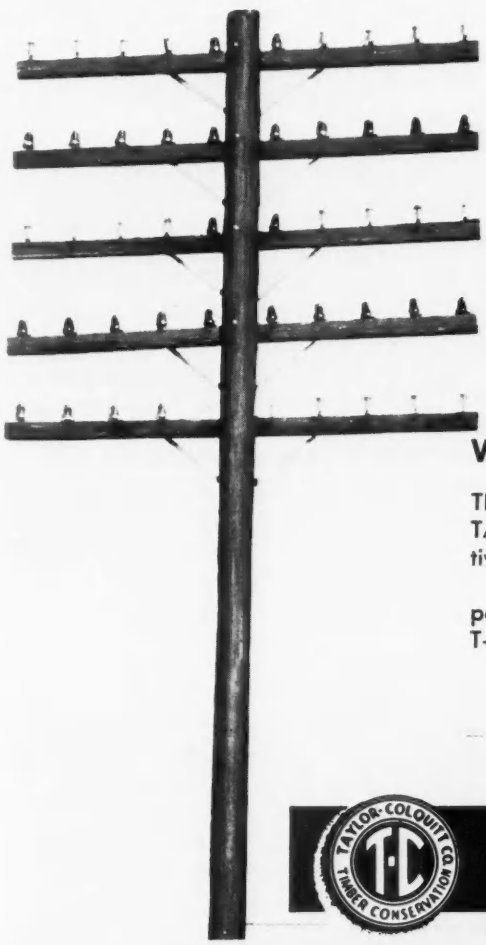
Bell of Canada Reports Station Gains In 1956

NEARLY a quarter of a million telephones were added during 1956 in the Ontario-Quebec territory of The Bell Telephone Co. of Canada, and the company provided service to more new customers than ever before, Thomas W. Eadie, president of the company, reported in a review of the year's operations. Bell of Canada now has more than 2,760,000 telephones in service.

The use of the telephone for both local and long distance calling again increased substantially, Mr. Eadie's statement said. The average number of local calls handled daily increased by eight per cent and the average number of long distance calls went up eleven per cent.

To finance the program for extending and improving service, the company raised more than $108 million, a record sum, during 1956. Construction of new facilities cost $139 million, about $10 million more than in 1955.

Together with the other members of the Trans-Canada Telephone System, the Bell Company is building a 4,000-mile microwave radio relay network from Sydney, Nova-Scotia, to Victoria, B. C.



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Questions and ANSWERS

Conducted by Jay G. Mitchell

In this issue, Mr. Mitchell answers questions on — (a) The Volume Unit Meter; and (b) Conventional Symbols for Capacitors. If you'd like quick help on some technical problem, send an inquiry to Mr. Mitchell, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago. A letter will bring a quick reply. Please enclose self addressed and stamped return envelope.

Volume Unit Meter

QUESTION: — *The recent series of questions with the answers on THE DECIBEL CALIBRATION have been carefully read and, as one result, we have acquired an understanding of the nature of telephone transmission characteristics that, in the maintenance field, has been very helpful. In several* television *shows in which some form of competition is staged between the performers the individual acts are rated by some form of electrical meter which indicates by a pointer the strength of the applause by the audience. Will you explain just what type the electrical meter may be as it appears to us that its indications are seemingly representative of the loudness of the* sound *of the applause which is, of course, also heard by the studio audience as well as the television viewers. We suspect that this is some form of decibel meter but we have not been able to make even a rough check of the meter readings with the apparent volume of the applause. It has, however, seemed to us that the volume of the sound of the applause was approximately in accord with the indications of the meter as they were displayed on the television screen. Stamped and addressed envelope is enclosed.*

ANSWER: — It is, of course, impossible to identify clearly and definitely the particular instrument described so briefly in this inquiry. It is, however, possible to outline some general principles on which a meter such as this correspondent describes must operate if it is to measure and indicate the *volume* or total audible strength of the *sound* of the applause. It is obvious that while this inquiry relates directly to the electrical interpretation of audible sound volumes in an auditorium it is closely *related* to the evaluation of telephone circuits and telephone equipment used for telephone transmission.

The meter described very briefly is, in all probability, what is known as a VOLUME UNIT METER. Like the DECIBEL METER it is an alternating current voltage meter which is calibrated with a scale to indicate *volume units* rather than decibels. The volume unit is abbreviated "VU" and is a unit of electrical *power* based on the decibel (dbm) but related to the total power transmitted by circuits for vocal and instrumental music, church services, speech reinforcement and public address systems. For this type of electrical sound transmission the properties of the meter unit are necessarily adapted to the measurement of the total power at all the frequencies that are transmitting sound electrically within the audible range.

The "VU" unit meter is calibrated, as stated, to indicate the power level of the entire *mixed signal* in units of decibels *above* or decibels *below* one milliwatt. It will be remembered that the *power* of one milliwatt in a loop of 600 ohms impedance (0.77 volts) is 0.00 decibels (dbm). Because of the many situations in which its indications may form the basis of equipment and plant design the "VU" meter must provide reliable indication of the *power* in circuits assigned to transmit program material including music as well as all other sound within the audible range transmitted.

In the service described in this inquiry the sound of the applause was, undoubtedly, primarily picked up by carefully placed microphones in the auditorium, possibly amplified and then transmitted to the meter which the audience in the auditorium and the television viewers are able to read.

The principal difference between the "VU" meter and the decibel meter, aside from the different scale calibration, is obtained by certain features of design. The "VU" meter is adapted to consolidate in one reading the total *power* required in its circuit for transmitting simultaneously all the sound within the audible range. The decibel meter on the other hand, when used in critical toll and other circuit transmission valuation, must respond to and register a readable indication of the power transmitted or received when a testing current of a single frequency (usually 1,000 cycles) is being transmitted between the terminals of the circuit being tested.

The design and installation of so-called Public Address systems is a highly developed art in itself. The arrangement and number of the loud speakers, the wiring, the degree of amplification, and the type of the several components has become a

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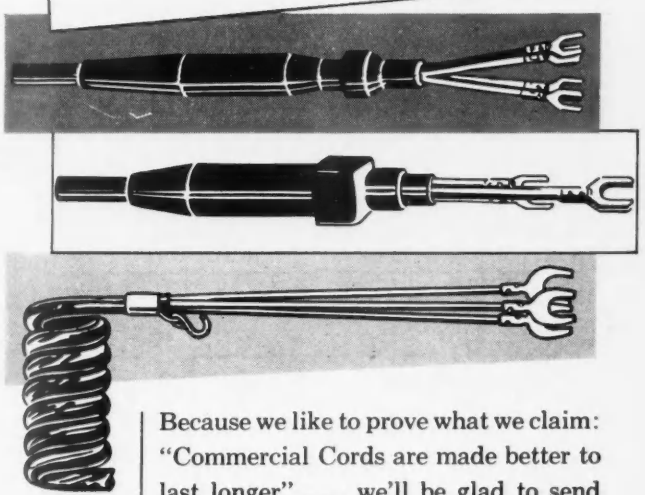

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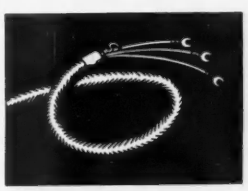

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well established field in communication engineering and should, it would seem, be of interest to every part of the communications industry.

Symbols for Capacitors

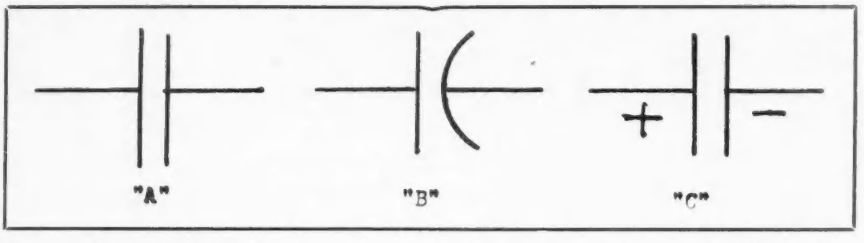
QUESTION: — *In certain circuit drawings shown in some circuits that we have been studying in our small local discussion group we have been puzzled by several different ways in which what must be a condenser is shown. For instance it appears that condensers, in some cases, are in circuits which, as fas as we can figure, should be carrying direct current while it has always been understood that condensers are not to be included in any circuit that is to carry direct current but may be included in circuits that are to carry alternating current only. Also please explain the significance of the drawing of a condenser with one of its plates curved and one straight. We are quite sure that an explanation will assist us in understanding the operation of these circuits unless, of course, the difference is merely an error in the drawing.*

ANSWER: — In many of the primary schematic circuit diagrams for electronic apparatus it is necessary to show, by the use of conventional symbols, the purpose and, often, the method of operation of the equipment components. Unless this method is followed it is practically impossible to understand the functions of the several items of equipment nor the functions for which it was designed. This is especially important in the case of electronic circuits and, in our opinion, will be found to be very important in the case of modern communication equipment. As the art of supplying communications facilities for the public progresses it must adopt, in our opinion, more and more of the type of devices which have been classed as electronic developments.

In this inquiry the circuit being studied is not identified and, for that reason, it is not possible to make any explanatory comments of a general character. Such comments would be, without doubt, of a helpful character. The answer, however, to the specific inquiry is as follows.

In general capacitors (condensers) may be divided into three distinctive classes each one of which may be employed to have a specific function but, while they are all properly designated as capacitors each type is represented in the schematic circuit by a distinctive symbol. These three symbols are shown in the figure and an understanding of their several characteristics is essential to any understanding of the operation of the equipment in whose diagramatic schematic circuit they are seen.

It should be carefully noted that the style of fixed capacitor schematically shown in "A" is often, when operating conditions permit, one of several enclosed in the same can. When this is the case the separate capacitors enclosed in the same can may be shown as separate capacitors in the schematic but will, in that case, be given the *same reference number* although shown for the sake of clearness in several places in the circuit. This symbol, "A", represents a fixed value capacitor. It may be, as stated above, enclosed in a metal can when of comparatively large capacitance value. It is *not adjustable.*



The symbol shown at "B" in the figure is an adjustable capacitor such as a tuning capacitor. Both the capacitor in the figure shown schematically at "A" and at "B" are not conductors between their terminals to direct current but are conductors for alternating current.

The capacitor shown schematically in "C" is often designated as an electrolytic capacitor and is *conductive to direct current in one direction* only but conductive to alternating current. For this reason this capacitor is always shown with one terminal marked positive + to indicate the sense in which it is conductive to direct current.—*Jay G. Mitchell.*

TELEPHONE ENGINEER & MANAGEMENT'S

HANDBOOK DATA SHEETS

Prepared By

JOHN S. REED

Reliable Squeez Sleeves For Straight Splicing

Index 3-20.035.4
Wire Plant — Compression Sleeves (Reliable Squeez Sleeves) and Grips
Page 2, Feb. 15, 1957

The following single tube compression sleeves are employed for straight splicing of telephone wires:

Kind of Conductors To Be Spliced	Code No.	Conductor Gauge	Conductor Mils	Die Groove	Number of Compressions On Each End
Inside and Bridle Wire	19-22-A-3	19—20—22—AWG	036—032—025	A	2
Drop and Bridle Wire	17-18-B-3	17—18 AWG	045—040	B	3
	16-B-3	16 AWG	051	B	3
	14-B-3	14 AWG	064	B	4
Solid Copper Line Wire	14-C-1	14 AWG	064	C	3
	12-C-1	12 AWG	081	C	3
	12-D-1	12 AWG	081	D	3
	10-C-1	10 AWG	102	C	3
	10-D-1	10 AWG	102	D	3
	9-D-1	9 AWG	114	D	3
	8-D-1	8 AWG	128	D	4
	8- J-1	8 AWG	128	J	4
	6- J-1	6 AWG	162	J	5
Solid Copper-weld Line Wire	14-C-1	14 AWG CW	064	C	3
	12-D-1	12 AWG CW	081	D	3
	10-D-3	10 AWG CW	102	D	4
	8-D-3	8 AWG CW	128	D	4
	10- J-1	10 AWG CW	102	J	5
	9- J-1	9 AWG CW	114	J	5
	8- J-1	8 AWG CW HS	128	J	4
	8- J-3	8 AWG CW	128	J	5
Galvanized Steel Line Wire	14-C-2	14 BWG BB	083	C	3
	14-C-5	14 BWG 85	083-85	C	3
	14-D-2	14 BWG BB and 85	083-85	D	3
	12-C-2	12 BWG old	109	C	3
	12-C-4	12 BWG BB	109	C	3
	12-C-5	12 BWG BB and 85	109-85	C	3
	12-D-2	12 BWG BB	109	D	3
	12-D-5 BB	12 BWG BB	109	D	3
	12-D-5	12 BWG 85	109-85	D	4
	12-D-5-135	12 BWG 135	109-135	D	5
	10- J-2	10 BWG	134	J	4
	10- J-2-85	10 BWG	134	J	6
	9- J-2	9 BWG	148	J	5
	8- J-2 BB	8 BWG	165	J	5

TELEPHONE ENGINEER & MANAGEMENT'S

HANDBOOK DATA SHEETS

Prepared By

JOHN S. REED

Reliable Reducing Squeez Sleeves

The following sizes of Reliable Reducing Squeez Sleeves are used for splicing the ends of two different sizes of wires.

Kind of Conductors To Be Spliced	Code No.	Conductor Gauge	Conductor Mils	Die Groove	Number of Compressions On Each End
Copper Line Wire to Copper Line Wire	12x17-18-C-1	12 to 17-18	081 to 045—040	C	3
	12x17-18-D-1	12 to 17-18	081 to 045—040	D	3
	12x16-C-1	12 to 16	081 to 051	C	3
	12x14-C-1	12 to 14	081 to 064	C	3
	12x16-D-1	12 to 16	081 to 051	D	3
	12x14-D-1	12 to 14	081 to 064	D	3
	10x17-18-C-1	10 to 17-18	102 to 045—040	C	3
	10x17-18-D-1	10 to 17-18	102 to 045—040	D	3
	10x16-C-1	10 to 16	102 to 051	C	3
	10x16-D-1	10 to 16	102 to 051	D	3
	10x14-C-1	10 to 14	102 to 064	D	3
	10x14-D-1	10 to 14	102 to 064	D	3
	10x12-C-1	10 to 12	102 to 081	C	3
	10x12-D-1	10 to 12	102 to 081	D	3
	9x17-18-D-1	9 to 17-18	114 to 045—040	D	3
	9x16-D-1	9 to 16	114 to 051	D	3
	9x14-D-1	9 to 14	114 to 064	D	3
	9x12-D-1	9 to 12	114 to 081	D	3
	9x10-D-1	9 to 10	114 to 102	D	3
	8x16-D-1	8 to 16	128 to 051	D	4
	8x14-D-1	8 to 14	128 to 064	D	4
	8x12-D-1	8 to 12	128 to 081	D	4
	8x10-D-1	8 to 10	128 to 102	D	4
	8x 9-D-1	8 to 9	128 to 114	D	4
	10x12- J-1	10 to 12	102 x 081	J	4
	8x16- J-1	8 to 16	128 x 051	J	4
	8x14- J-1	8 to 14	128 x 064	J	4
	8x12- J-1	8 to 12	128 x 081	J	4
	8x10- J-1	8 to 10	128 x 102	J	4
	8x 9- J-1	8 to 9	128 x 114	J	4
	6x14- J-1	6 to 14	162 x 064	J	4
	6x10- J-1	6 to 10	162 x 102	J	4
	6x 9- J-1	6 to 9	162 x 114	J	4
	6x 8- J-1	6 to 8	162 x 128	J	4

General of Southwest Directors Hold Board Meeting In Exchange Area

By F. E. HIGHTOWER

PUBLIC RELATIONS has become a link in the chain of management and an important segment of every modern, growing business. Instead of a haphazard, minor part which PR played yesterday, it has become today a long-range, well-planned, well-thought-out program for getting a company's story before the public — in the case of the telephone industry, the story of growth, expansion, operating problems, and the answers to many questions often asked by the public.

This emphasis on the public relations program has brought about a never-ending search for new ways to reach every segment of the public. This search led General Telephone Co. of the Southwest to developing the idea of holding meetings of its Board of Directors at various exchanges throughout the operating territory and inviting certain key citizens to attend these board meetings.

A rather new idea — yes, but one which can pay big dividends.

Here is the reasoning behind the idea. Public relations must be a long-range program and it must have the complete backing of top management, the guiding hand of middle management and the interest and understanding of the program at the local, district and division levels.

With the backing of top management, middle management has the opportunity to offer the guiding hand to the local personnel with whom the real success of the program rests. But it can be noted that the primary part top management plays in this picture is the "walk-in" part, so to speak, of approving the PR program. It was felt that top management should have an opportunity to play a much larger role. Open board meetings seemed to be the tool with which to create this role for key men in the organization.

"Confidence In The Future"

HOLDING open board meetings to which civic leaders and prominent businessmen in the town would be invited would give the local citizens an opportunity to meet board members, know the high caliber of men who make up the board, and learn from top management about the business. In addition, such board meetings would demonstrate to the residents of the town in which the meeting was held the confidence of the Company in the future growth of the town. It was felt that the city or town would be honored by being chosen as the site for a board meeting.

These beliefs proved themselves when the first open board meeting was held in Haskell, Texas, early in August. *Please turn to page 80*

GLADWIN PLASTICS INC.

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to Vice-President & Member of Our Board of Directors

SUPPLIERS to the Telephone Industry OF:

★ World-Famous GLO-DOMES and TRI-DIRECTIONAL SIGNS for outdoor booths
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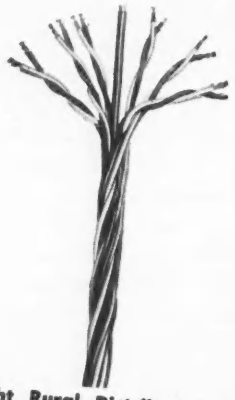
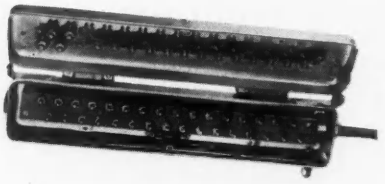
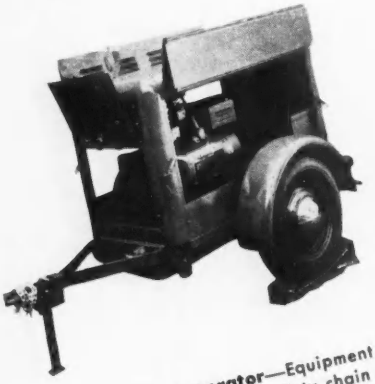


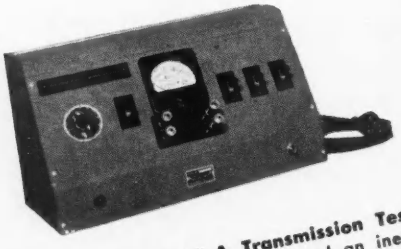
Lightweight Rural Distribution Wire. Plastic insulated #19 A.W.G. soft copper conductors in color coded pairs are cabled around a polyethylene insulated, .109 high strength, galvanized steel support wire. Each conductor pair has a controlled different length twist to avoid cross talk. Breaking strength of 1800 pounds. Ideal for temporary service or cable relief. ANSONIA WIRE & CABLE COMPANY.



This Cook Stranterm is available in 6, 11, and 16 pair. The only strand-mounted Cable Terminal designed for a flexible system of Minigap or Mytigap protection. Supplied with either plastic or lead sheathed cable stub.
COOK ELECTRIC COMPANY.



Maintenance Generator—Equipment includes toolbox, fuel tank, safety chain and chocks, taillight and reflectors, and sheet-metal house with hinged sides, hinged front cover. Available with or without generator —92" long, 53" wide, 51" high. With generator, weighs 800 lbs. S & G MANUFACTURING CORPORATION.



Shallcross #692-A Transmission Test Set. Provides a convenient and an inexpensive means of measuring transmission line losses in 600 ohm lines, switchboard circuits and other equipment. Measures comparative capacitance of condensers, and tests the balance of repeating coils and relays. SHALLCROSS MFG. COMPANY.

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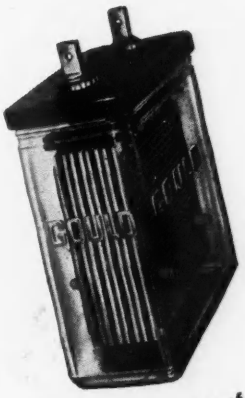

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Automatic Constant Voltage Charger operates without moving parts. Compensates for changes in input voltage load. Single-phase Flotrol in the 24 and 48 volt types is available in range of sizes from 1 to 24 amperes.
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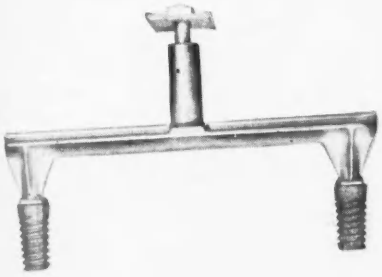

Speed up Installation with one-piece, all aluminum, transposition brackets. Light weight, easy to handle and install. They come completely assembled in cartons of 20 brackets each and can be moved to job in original shipping cartons. Delivery 10 days from receipt of purchase order.
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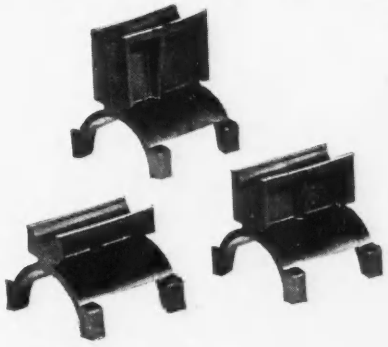

Form Fitting Lead and Plastic Cable Spacers used in lashed cable construction at poles and splices, provides separation between cable and strand. Easy to use with any size cables. Made by O. F. KINSEL & SONS.

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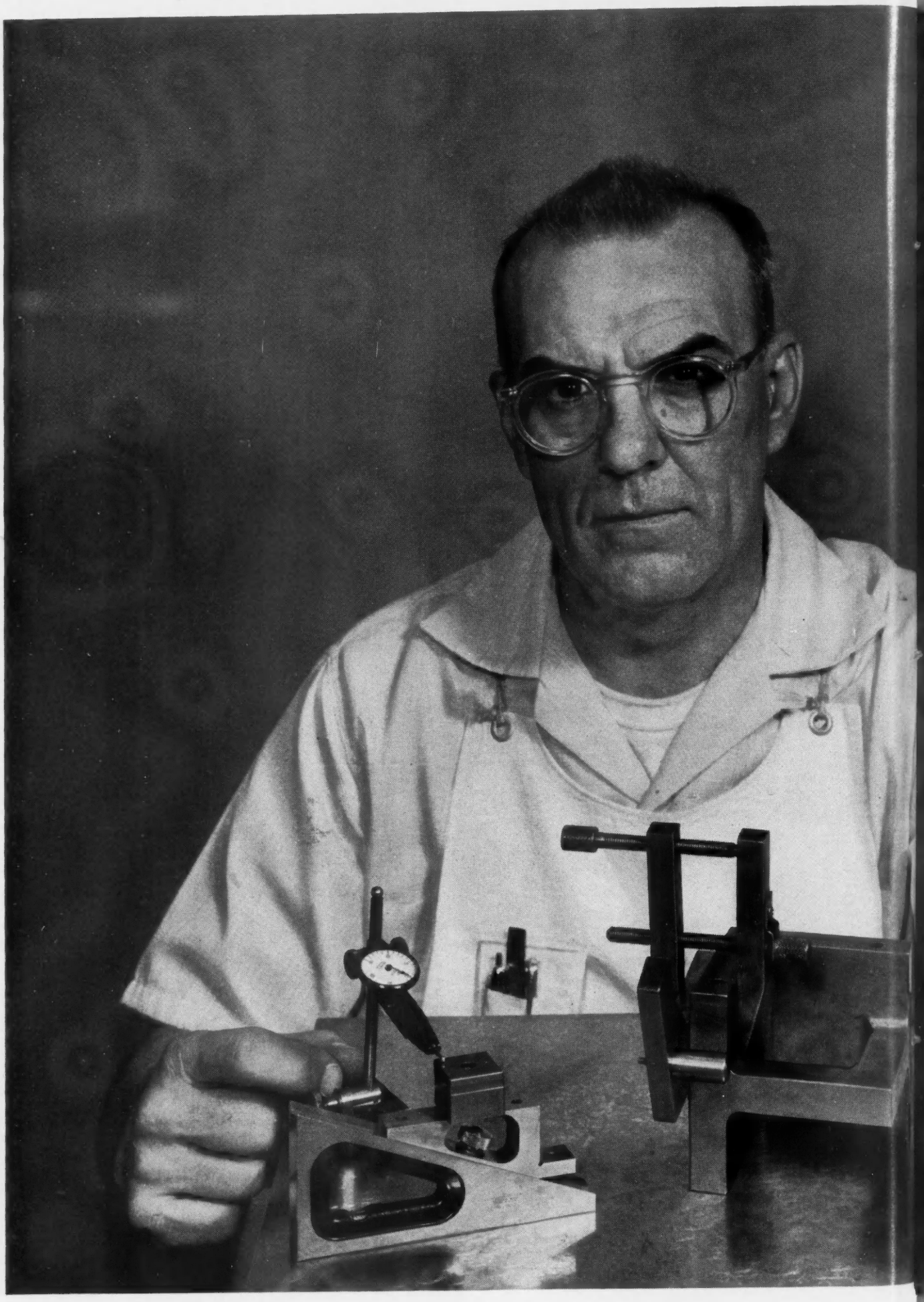

PORTRAIT OF AN INDUSTRY

The Toolmaker

He's the man behind the man who operates the machine. With the highest order of craftsmanship, the toolmaker, working to tolerances almost infinitely precise, shapes the molds, dies and punches that will be used to produce the parts of fine telephone equipment for Bell telephone companies.

Thus, like the lineman and the operator, the toolmaker lends his special skills and talents to help achieve the common goal of the telephone industry . . . providing better telephone service for America.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

(Continued from page 75)

Haskell was chosen as the site of the first such meeting for several reasons. One, a large rural project extending service to a large rural area had just been completed, and two, the senior member of the board in point of service, resided in Haskell.

In addition to the prominent businessmen of Haskell, such as the mayor, councilmen, civic leaders, and several subscribers to the new rural service, share-owners who lived in the area were included on the guest list. Representing the Company, in addition to members of the board of directors, were the division and district managers, the secretary and general attorney, the public relations director, as well as the chief operator, who in this case represented the local-level phase of the PR program as no district or division office is located in the town.

Immediately preceding the board meeting, a luncheon was scheduled. Invitations were in the form of letters.

The Agenda

CAREFUL consideration was given to the agenda for the meeting, which, of course, had to be of the nature for general public consumption. The final agenda for the board meeting included preliminary remarks from the president concerning the board meeting in Haskell, comments about completion of the rural project and other pertinent remarks concerning capital requirements of the Company; a report from the operating vice president covering points about the first six months of the year's operations, construction program, revised budget and other data related to the operating department; a report from the vice president on rates and revenue requirements and a public relations report by the PR director. Contents of each report were geared to give the board members and the citizens a current and complete picture of company operations.

Each report was limited to approximately 10 minutes and care was taken that the overall program not last longer than two hours, including the luncheon which began at 12 noon. Time was allowed preceding the serving of lunch for localites and board members to meet and become acquainted, thus giving the public relations a shot in the arm by letting top management further the local-level PR program which had been diligently promoted and pursued.

PICTURED AT A BOARD MEETING held by General Telephone Co. of the Southwest in Haskell, Texas, are from left: E. H. DANNER, San Angelo; HERBERT L. NICHOLS, Dallas; A. G. PIERSON, Haskell; DON HOLDRIDGE, San Angelo; NEELY G. LANDRUM, Dallas; J. M. MURRAY, Hobbs, N. M.; W. G. WRIGHT, president, San Angelo; MRS. PIERSON and W. T. BUSCH, Baytown, Texas; the late DON HUNSAKER and F. E. HIGHTOWER, San Angelo; MRS. WRIGHT; MRS. FADWA HASSEN, Haskell, Danner, Nichols, Pierson, Landrum, Murray, Wright, and Busch are members of the board. Mrs. Hassen is a stockholder.

Because of the previous local-level PR program, the newspaper was cooperative in promoting the event. Pictures of each of the board members, along with biographical sketches were furnished the newspaper by the PR Department. Also furnished were releases concerning the reason for holding the board meeting in Haskell, a story about the Haskell Rural Project and a detailed story about the senior board member and his activities. Tied in with the releases was advertising about completion of the rural project as a "mark of progress" for both Haskell and the Company.

Tangible results are always gratifying and in this instance it was apparent the idea was well received. The luncheon and board meeting were well attended and there was a general feeling of good fellowship among all concerned.

It is felt that the program can be developed, enlarged and varied to meet many situations. It can help alleviate, or with foresight, prevent pressure and misunderstandings between the company and the communities it serves. Certainly a board meeting cannot work miracles by suddenly solving problems and dissolving misunderstandings, but it is believed that well-planned and well-timed board meetings outside the home office can accomplish PR goals which otherwise might never be attained.—*F. E. Hightower.*

Earle Blomeyer Named V. P. Gladwin Plastics, Inc.

AFTER 18 YEARS with the Gary Group in Nebraska, Missouri, Illinois, Indiana, Ohio, Kentucky, Tennessee, and Georgia, Earle Blomeyer has been elected vice-president and a director of Gladwin Plastics, Inc., Atlanta, Ga., it was announced by Ralph F. Chambers, executive vice-president of the Atlanta firm which manufactures telephone merchandising aids.

Mr. Blomeyer's election is part of Gladwin's overall expansion plan which included moving, last month, to 165 Courtland Street, N. E., thus making it possible to triple the production facilities of the firm.

Mr. Blomeyer, who will handle the development and sales of telephone industry products, began his career with the Gary Group after his graduation from Northwestern University in 1936. He served in various capacities with operating subsidiaries in Missouri, Illinois, Indiana, and Georgia prior to World War II.

After service with the U. S. Army Signal Corps in World War II, he served as vice president and Kentucky general manager of the Southern Continental Telephone Co., and president of the Nebraska Continental Telephone Co., before joining the General Offices of the Gary Group in Chicago in 1955. After the merger of the Gary Group and the General Telephone Corporation, Mr.

Please turn to page 82

EARLY TELETYPEWRITER

TELETYPE MODEL 28 PRINTER

50 YEARS THAT CHANGED THE PICTURE

The need for a reliable printing telegraph instrument that would provide a typed record of the message for both sender and receiver brought the company now known as the Teletype Corporation into the picture in 1907. From the halting performance of the original page printer to the smooth 100 words per minute of today's precision equipment has been a major step in communications.

But today Teletype equipment is often far more than a communication instrument. It is a basic element in production control systems . . . its ability to transmit and reproduce text and punched tape is harnessed to office automation . . . it provides a "conveyor system" for channeling complex raw data to a computing center thousands of miles away—and getting the answers back in a twinkling.

Indeed, Teletype machines have made many of the dreams of 1907 a daily part of today's business world. And the horizons widen daily as new dreams occupy our engineers and keep our laboratories humming.

If you would like a copy of our booket, "The ABC's of Teletype Equipment," write to Teletype Corporation, Dept. TEM 2, 4100 Fullerton Ave., Chicago 39, Illinois.

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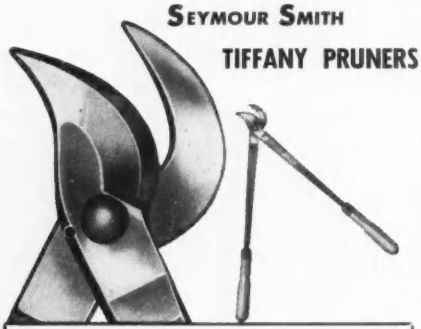
1957 Golden Anniversary Year

Illustrated above is No. 11 Tree Pruner with center cut action by tempered steel blade that easily handles 1" branches. Head is reinforced malleable iron. Spruce poles with telescoping aluminum joints. For heavier work No. 12-18, capacity 1½". Also Pole Saws.

for clearing brush...

SEYMOUR SMITH

TIFFANY PRUNERS



Hand forged throughout. Fast and easy double cut action with thin blades shaped to "draw in." Improved bolt and nut joint, through handle and riveted grip fastening.

FAST-CUTTING SAWS

Blades of Swedish charcoal steel. Large, deep teeth with heavy set to prevent binding. Hand and Pole models for all work up to chain sawing.

Quality Tools
SEYMOUR SMITH
Since 1850

Send for FREE literature
Seymour Smith & Son, Inc.
4402 Main St.
Oakville, Conn.

Blomeyer resigned in order to move to Atlanta.

Gladwin began developing and producing coin telephone sales aids in 1947. Now among its most important products used internationally is the "Glo-Dome," a lighted plastic top for outdoor telephone booths.

Of recent development is the lighted bell for mounting on top of an aluminum booth. This is rapidly becoming the symbol for telephone service in many areas. The new carrying case for miniature color telephones is, according to the firm's executive vice-president, already in use from coast to coast by both independents and the Associated Bell Companies in promoting the color story.

EARLE BLOMEYER

Also, Mr. Chambers said a great deal of development work, made possible by the expanded plant facilities, on new telephone merchandising aids is now in progress.

California General Announces $72,000,000 Expansion

ONE OF THE largest utility expansion programs in Southern California history has been announced by Harlan W. Holmwood, executive vice president of the General Telephone Co. of California, who said the company expects to invest $72,000,000 in 1957.

Largest single item in the budget is $17,183,000 for dial and other equipment in central offices. Other major telephone expenditures will be made for telephone instruments, wiring and additional equipment on customers' premises amounting to nearly $15,824,000. Outside plant, which covers buildings, cables, wire lines, poles and the thousands of other items which go into outside telephone construction, will amount to $25,864,000. Land acquisitions and purchases of working tools, vehicles and miscellaneous telephone equipment comprise other requirements.

The company's eastern division, which contains properties in and around the rapidly growing East San Gabriel Valley area, Pamona Valley, Ontario and San Bernardino, has been allotted $27,255,000 of the 1957 program. $15,910,000 will be expended for new facilities in the western division which includes the Santa Monica Bay Area, West Los Angeles, Redondo and Lancaster.

Whittier and Downey exchanges, making up the central division, have a $13,744,000 budget, while the southern division's territory of Long Beach, Huntington Beach, Westminster and Leguna Beach has programmed $8,257,000. Santa Barbara, Oxnard, and Santa Maria and surrounding communities in the northern division will receive nearly $5,846,000 for expansion and improvement.

MISS RUTH I. KEITH, general commercial manager of The Elyria (Ohio) Telephone Co., recently was named as "Elyria's First Lady" of the year. The annual award sponsored by the city council of the Beta Sigma Phi sorority, was given in recognition of her outstanding accomplishments and contributions to community life. This is the second honor of this character for Miss Keith. In 1955 she was selected as "The Woman of Achievement" by the Quota Club. Miss Keith, who has been with the company for more than 30 years, is one of the few women in the telephone field holding such an administrative and executive post as that of commercial manager.

A communications utility used its 702 to dig 18,000′ a month. One job—opening 2500′—cost one-third of the estimate . . . establishing a new low for underground cable installation.

Now you can place your cable underground at low cost

The many advantages of having electric and telephone cables underground have long been recognized. The chief obstacle has been the cost of digging and backfilling the required trench.

The new Barber-Greene 702 Ditcher has solved this problem. Despite its small size, the 702 is the newest machine in the most rugged line of ditchers made.

Prior to this new development, available machines either dug too wide for practical and economical operation, or did not have the stamina and digability required for coping with unfavorable conditions.

Utilities, contractors and railroads are now gaining the advantages of underground lines and services in virtually every area of the country.

Applications, to date, include electric power and telephone lines and house services, railroad signal systems, traffic control systems, outdoor theater wiring, installations of small gas and water lines and services, lawn sprinkling systems, and others.

Digs to 40″ deep, 5″ wide. The 702 can be towed or carried on a light truck. Simple dual controls permit operation from seat or from side of machine for full view of trench.

56-10-D

Write for literature on this important, new, low-cost ditcher

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Daniel B. Corman Joins Kentucky Cooperative

ROBERT EATON, president of the South Central Rural Telephone Cooperative Corp., Glasgow, Ky., has announced the appointment by the board of directors of Daniel B. Corman as general manager of the cooperative.

Mr. Corman was executive vice president and general manager of the Northeastern Telephone Corp., which serves 5,500 subscribers in five Kentucky counties. He had been a stockholder and official of Northeastern for many years and recently disposed of his holdings in the company.

When the Rural Electrification Act of 1936 was amended by Congress in 1949 to provide for REA Loans to Rural Telephone Systems for the improvement and extension of telephone facilities, the REA Administrator appointed Mr. Corman as his advisor in matters pertaining to the rural telephone program.

Mr. Corman served in that capacity for three years until the telephone loan program of REA was well established.

David Hamil, administrator of the Rural Electrification Administration, recently named Mr. Corman, chairman of REA's Telephone Advisory Committee.

Middle States Names Wandrey, State Manager, Illinois

JUDSON LARGE, president of Middle States Telephone Co., of Illinois, has announced the establishing of a state office at Des Plaines, Ill. for the operation of all Middle States Telephone property in Illinois.

M. M. Wandrey, previously chief engineer for the company's property in Illinois, Iowa, Minnesota and Wisconsin, has been appointed to the position of Illinois manager. Mr. Wandrey's supervisory staff consists of a full engineering department, traffic manager, plant manager, and commercial manager.

Roy G. Price Joins Sully-Buttes Co-op.

GLEN HUGHES, president of the Sully-Buttes Telephone Cooperative, Highmore, S. D., has announced that the co-op has accepted the resignation of Dale Jacobson, and hired Roy G. Price of Bemidji, Minn., as manager.

Mr. Jacobson, announced his resignation in order to enter the telephone engineering field as an associate of Harold Ericson, with offices at Hector, Minn. The firm will specialize in telephone engineering and has contracts supervising the building and modernization of telephone systems in South Dakota, Minnesota, Wisconsin, and Iowa and will further expand its field.

Mr. Price was manager of the Paul Bunyan Telephone Co-op, Bemidji, Minn.

Arnold Swallows Named To Durham, N. C. Post

ARNOLD SWALLOWS, Tennessee plant superintendent for Southern Continental Telephone Co., has been promoted to transmission engineer for General Telephone Co., of the Southeast.

Mr. Swallows will have headquarters at Durham, N. C. He will still supervise transmission engineering in Southern Continental's Tennessee operations in addition to similar duties in six other states of the southeast group.

Mr. Swallows joined Southern Contental in November 1951, as traffic superintendent for Tennessee in November, 1955, shortly after merger of Southern Continental with General.

OVER 6000 MURPHY CABLE TESTERS NOW IN USE

THE MURPHY ONE MAN CABLE TESTER

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NOW
A SPLICER ALONE
can identify non-working cable pairs three times faster than two men could heretofore.
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THE COMBINATION TAG— and TERMINATING BOARD
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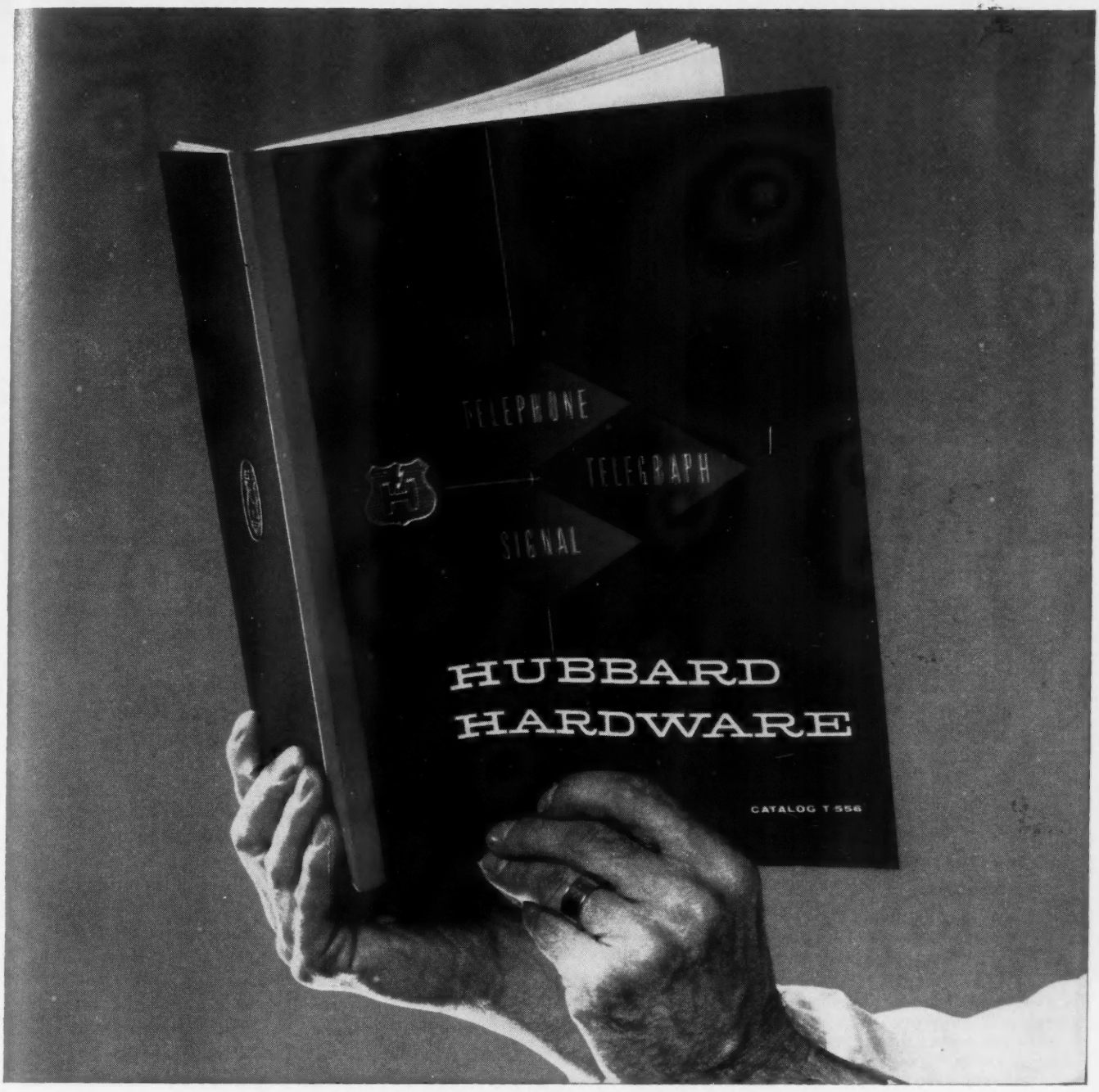

Hubbard Communications Hardware Catalog T 556

This comprehensive, 56-page catalog presents in compact and usable form detailed listings of Hubbard Hardware products for the Communications Industry.

Technical Data—Arranged in convenient tabular form. Gives you complete information on weights, measures and material properties plus indications of major industry standards.

Product Information—Brief, detailed description of products, applications, dimensions and shipping weights. Cross-referenced with price lists.

Easy Reference—Completely indexed by products. Write for a copy today.

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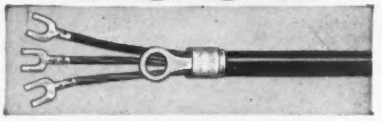

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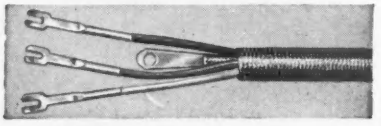
NYLON



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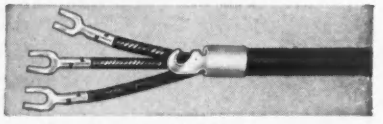

Are you familiar with the features of these fine cords?

NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

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Cord and Wire Co.
1723 W. MONTROSE AVE.
CHICAGO 41, ILL.

General of Southeast Advances Paul Payne

PAUL S. PAYNE, general plant manager of General Telephone Co. of the Southeast, Bluefield, West Va., has been appointed general plant construction superintendent for the Southeastern group of General Telephone operating companies.

Mr. Payne will conduct his operations from the Durham headquarters. He has been assigned supervision of all plant construction for group companies consisting of General Telephone Co. of the Southeast, Southern Continental Telephone Co., Cookeville, Tenn.; Georgia Continental Telephone Co., Monroe, Ga.; South Carolina Continental and Sumter Telephone Companies, Sumter, S. C.; Seacoast Telephone Co., Myrtle Beach, S. C., and Durham Telephone Co., Durham, N. C.

Mr. Payne has more than 16 years continuous service in the telephone industry, having begun work as a telephone lineman in 1940 at Elizabethtown, Ky. He later filled increasingly important plant positions at Cookeville, Tenn.; Ashland, Lancaster and Morehead, Ky., moving to Bluefield in 1953 where he has been in charge of plant activities in that area until the present time.

Deuel Tel. Co-op. Awards $209,459.73 Contract

THE Deuel Telephone Co-operative Assn., owners of the telephone exchange for Hendricks, Minn., and Astoria and Brandt, S. D., has awarded a $209,459.73 contract for construction of a new dial system to the Mork Hardware and Electric Company, Clarkfield.

William L. Hart Joins Michigan Commission

WILLIAM R. HART, former mayor of Saginaw, Mich., has been named to the Michigan Public Service Commission by Gov. G. Mennen Williams. Mr. Hart, 41, has practiced law nearly 20 years. He is a native of Saginaw, received his law degree at the University of Detroit and is married and has two children.

During World War II he served in the army and after the war spent 18 months with the Veterans Administration. He was the Democratic candidate for Congress from the eighth congressional district in 1956. He was defeated by the Republican incumbent, Elford Cederburg. He has been chairman of the Saginaw county Democratic committee for the past five months.

Power Line Phones Reported By Russia

RUSSIA's Collective farmers soon may get telephone service over power lines, Pravda reported last month. The paper stated that the all-union scientific and research institute has perfected a high frequency telephone which uses power lines. It is designed for use in regions remote from telephone lines.

Victor Rhine Purchases Anderson (Mo.) Tel. Co.

THE Anderson (Mo.) Telephone Co., has been sold to Mr. and Mrs. Victor Rhine, owners of the Pineville (Mo.) Telephone Co. The Rhines plan to install a dial system at Anderson. Mr. and Mrs. J. A. Royce have operated Anderson Telephone for 41 years.

Mountain States Reports Largest Expansion Year

MOUNTAIN States Telephone and Telegraph Co., Denver, Colo., has reported its 1956 construction program was the largest in its history.

President, Walter K. Koch said that expenditures of about $100 million were necessary to keep pace with service requirements. He said many sections of the Rocky Mountain area are maintaining their rapid rate of growth while other parts of the country show a leveling off.

Koch said the 1957 program will continue at the same high level. The company operates in Colorado, Arizona, Montana, Idaho, New Mexico, Utah, Wyoming and El Paso.

More than 137,000 telephones were added by the company in 1956, 14 per cent more than last year, and at the end of 1956 over 1,800,000 were in service — more than double the number at the end of 1946.

A large part of the expenditure went into local service additions — more poles, wire, switchboards and equipment. This represented about $57 million of the total, Koch said. Long distance calling increased 10 per cent over 1955, and an expenditure of $12 million was made for additional long distance facilities.

The number of dial-operated telephones for the company climbed to

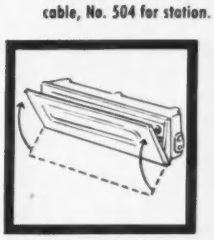
RELIABLE
STRAND MOUNTED TERMINALS

Whether the plant employs protected or unprotected type cable terminals the design and dependability of the Reliable Strand Mounted Terminal upholds a forty-eight year old reputation for thorough engineering and thoughtful design.

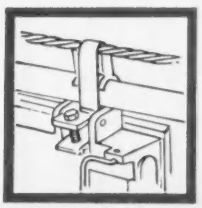
For example: The silicon bronze binding posts on which the cable stub wires are terminated are sealed, with the wires, in a glass-reinforced, polyester resin – a material with exceptionally high dielectric qualities. To minimize, if not actually eliminate surface leakage, binding posts are generously spaced ($1^{1}/_{16}$").

Where protection for either the cable or the station is desired the new Reliable Fuseless Protector Unit will dissipate static discharges across the elements to ground. With repeated heavy discharges, with fault currents or with power surges, carbons are shunted as the attendant heating permanently closes a metallic circuit to ground. Illustrated information will be mailed on request.

Protector unit—No. 506 for cable, No. 504 for station.



Patented cover latches and unlatches easily.



Single screw clamps tighten and lock mounting strap

Reliable

RELIABLE ELECTRIC COMPANY CHICAGO

84 per cent from 77 per cent at the beginning of the year. About $19 million was spent on the dial conversion program, including building construction where necessary.

About $12 million covered the cost of relocating facilities because of highway moves, defense activities, vehicles, supplies and items of general equipment.

General of Ohio Reports Record Growth in 1956

CLARE E. WILLIAMS, president of General Telephone Co. of Ohio, announced last month that extensions and improvements of the company's plant during 1956 amounted to more than $5,070,000.

Mr. Williams said the company added telephones through installation during the year, increasing the total number of telephones in service to 112,259 at year's end. The net gain in telephones for 1956 was reported as the largest annual increase in the history of the company.

1956 volumes of local and long distance traffic also hit new highs. More than 171,313,000 local calls switched through the company's exchanges, and General subscribers originated and received nearly 15 million long distance messages.

At year end, the company's personnel numbered approximately 1300, and its 1956 payroll was in excess of $4.5 million.

General's plant construction during the year not only provided new facilities to serve thousands of new customers and accommodate additional millions of calls, but reflected conversion of a number of exchanges from manual to dial operation, including the construction of two complete new dial exchanges.

Play your cards straight and make an investment in wood, properly creosoted by REPUBLIC. The record of long service-life (up to 70 years in some cases) proves the benefit of using pressure-creosoted wood. Republic Creosoted Products resist decay in all climates (in acid or alkaline soils) and attack by insects and fungi. This makes REPUBLIC CREOSOTED WOOD a must to economy-minded buyers.

Republic CREOSOTED PRODUCTS

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MERCHANTS BANK BUILDING · INDIANAPOLIS 4, INDIANA

Mansfield (Ohio) Tel. Co. Makes Rate Adjustment

THE OHIO Utilities Commission has approved rate inceases requested by the Mansfield (Ohio) Telephone Co. to bring in $459,108 additional revenue.

The increases include: One-party business telephones from $8.50 to $11 a month; two-party business telephones from $7.25 to $10; one-party residential from $3.50 to $6; four-party residential from $2.75 to $4, and eight-party residential from $1.75 to $2.75.

REA Reports Loans To Two Independents

MISSISSIPPI: — Glen Allan Telephone Co., Glen Allan, Miss.; $125,000, first loan, to improve and extend rural telephone service in Issaquena county.

The new borrower proposes to use the loan funds to improve service for its 131 existing subscribers, and to furnish service for the first time to 143 farm families now without telephones. The company now provides magneto service over 35 miles of line.

New construction planned by the borrower includes a dial central office at Glen Allan, and 34 miles of line. Of the existing line, 10 miles will be used in place in the expanded system, and 25 miles rebuilt.

Jack Stern is president and Mrs. Marguerite C. Webb is manager of the Glen Allan company.

NORTH DAKOTA: — Inter-Community Telephone Co., Nome, N. D.; $644,000, first loan, to improve and extend rural telephone service in Barnes, Griggs, Foster, Ranson, Steele and Stutsman counties.

The new borrower plans to use the

loan funds to bring service for the first time to 509 rural subscribers, and to improve service for 453 existing subscribers in its area. The existing subscribers are now being served over 217 miles of line through the borrower's Dazey, Hannaford and Nome magneto exchanges and its Fingal dial exchange.

The company's present plans include new dial central offices at Dazey, Hannaford and Nome, and 408 miles of new line. Of the existing line, 10 miles will be used in place in the expanded system, 153 miles will be rebuilt and the remainder retired.

John L. Nilsen is president and manager of the Inter-Community company.

Texas Tel. Completes Gunter Conversion

THE RECENT CONVERSION of the Gunter exchange to automatic dial service marked another step forward for Texas Telephone Co., exchanges in the North Texas area. The Gunter exchange was purchased in February, 1956, and has grown under Texas Telephone ownership, from 93 telephones to 170. Since purchase of the exchange, Texas Telephone rebuilt urban and rural lines, and built a new building which now houses the dial equipment.

Texas Independent Starts $229,891 Construction Project

CONSTRUCTION of 390 miles of pole lines for the Rocksprings & Nueces Canyon Telephone Co., Rocksprings, Texas started recently. The company has set up a construction budget of $229,891.27 for the 390 miles of pole lines. The material estimate is $133,495.96, labor and equipment estimates are $96,395.31.

Mexican Tel. Plans Toll Expansion Project

LONG DISTANCE telephone service between Juarez and Nuevo Casas Grandes in Northwest Chihuahua, will be established at a cost of 522,000 pesos (about $41,000), officials of the Mexican Telephone Co., announced recently.

The new service will give the town its first telephone connection with the rest of Mexico. The line will be 150 miles long.

Earnings Growth Reported For Citizens Utilities

CITIZENS UTILITIES CO., Stamford, Conn., per share earnings for 1956 show a significant increase over the previous year's record level, making this the 12th consecutive year in which a new per share earnings record has been achieved, President Richard L. Rosenthal said in a year-end review of company operations.

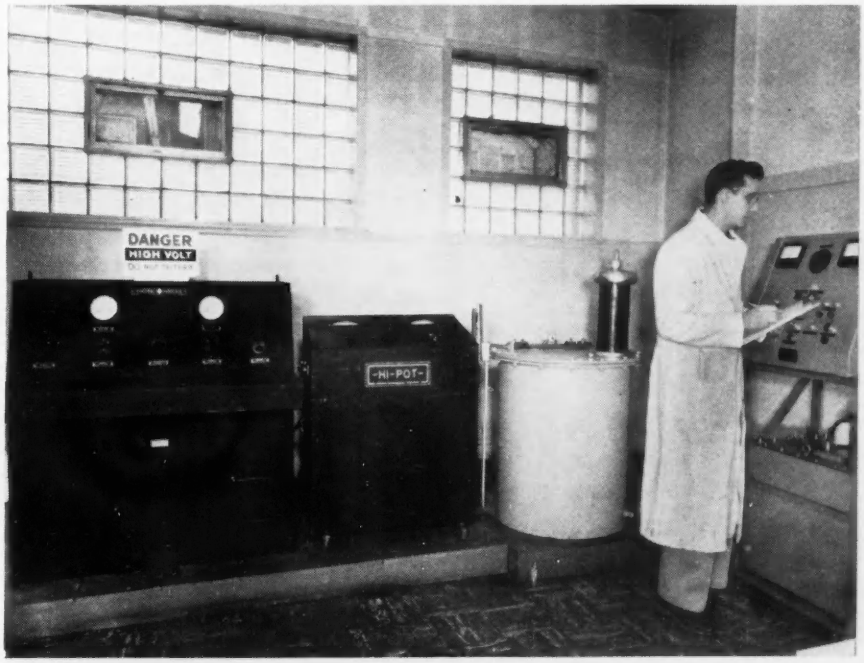
"Further per share earnings progress during 1957 seems likely on the basis of anticipated revenue growth in areas now served, including the six properties acquired during 1956. In addition, the company is currently in the midst of active and promising negotiations on other properties, all in rapidly growing areas of the country, and some in states in which Citizens is not operating," he added.

The current negotiations represent a continuation of a program of further expansion and diversification of the company's operations, which now include electricity, water, gas and telephone service in over 200 communities in seven states. Rosenthal

Please turn to page 92

Advertisement

A Process of Elimination



Measuring Mytigap time and high potential characteristics in the High Voltage Laboratory.

BY ELIMINATING carbons, organic materials and sustained arcing, a new standard in low maintenance attention has been established in the manufacture of telephone lightning arresters.

The new Cook Electric Company Mytigap accomplishes the function of a self-restoring high potential and power surge arrester by the use of manganese nickel alloy discharges, Cecotite ceramic insulation, and a self-compensated system of thermal ground switching. The elements which actuate the grounding electrodes are not sensitive to normal ambient temperatures of less than 300° F and —65°F.

The intense heat of arcing, however, produces movement. An arc of 30 amperes will cause grounding in one tenth of a second. The welding of the electrodes is prevented by high melting point of the manganese nickel alloy elements with RU78 added. The thermal flexure of the contact assembly assures the opening of the circuit after cooling below 300°F and self-restoration of the arrester is complete.

For literature, samples, and additional information contact your nearest distributor or telephone supply salesman.

construction and maintenance DIGEST

- **Tailor-made**
- **25-year battery**
- **Anti-aging cable**
- **Splice in a trice**
- **Free book tells all**
- **Taker of punishment**
- **Non-slip action**
- **In the (sq.) groove**
- **Nix on cross-ring**

Published regularly to help you get the most out of your materials and supplies dollar

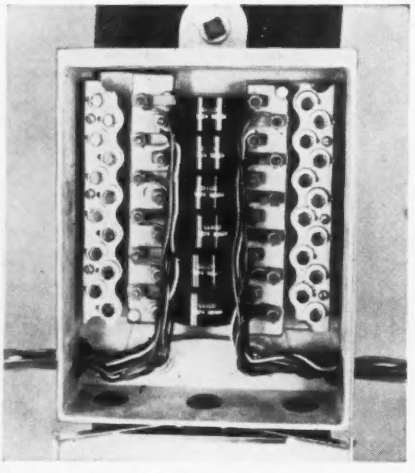
by Ralph W. Pouk, Jr., Office Mgr. and Inside Sales—Chicago

Back when I was a journalism student, I learned the most important news is always—WHO. The same is true in your business. When it comes to ordering supplies, names are the important part of the story. Behind the products you order stand the maker's name—**and** Stromberg-Carlson's name for 62 years of the finest in the field of sound. Together, these names protect you with a double guarantee on performance. They tell you you'll be satisfied with equipment you order. And of course, each order of yours is a boost for the science of telephony—because your supply business plays a major part in helping us continue our research for new and better telephone equipment. We're mighty grateful for your support. We'll do our best to merit your friendship in years to come.

Winning Combination

You get a combination terminal box and housing for loading coils with the CEECO Type 177 Terminal-Loading Case.

Sturdily made of cast aluminum by Communication Equipment and Engineering Company, it is designed for use with the new rural distribution wire for 6, 11 and 16 pair capacity.



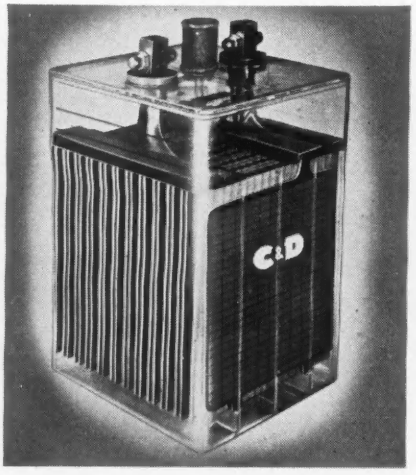
Available in 8 types to meet your needs.

The terminals are designed to accommodate loading coils of 88MH or 44MH inductance. You may order them with or without protectors.

Battery will still have its pep when 1982 rolls around

It will last 25 years—in full float service! That's the life expectancy of C & D's PlastiCal (lead-calcium grids) telephone battery.

You get this extra-long, trouble-free operation because C & D Batteries, Inc. use an exclusive suspended and supported plate construction.



In full float service, this telephone battery stays on the job a quarter of a century.

Illustrated here is a typical C & D telephone battery with a 660 A.H. capacity. When ordering this 25-year battery, specify PCE-660.

When you find that a 14-year expectancy meets your needs, you can get dependable operation from a C & D PlastiCell (high-tensile lead alloy grids) battery. For a PlastiCell with capacity of 660 A.H., specify CE-23.

You can order either of these C & D telephone batteries, plus other capacities, from your Stromberg-Carlson representative. Ask him about extra-long-life power supply with C & D Batteries.

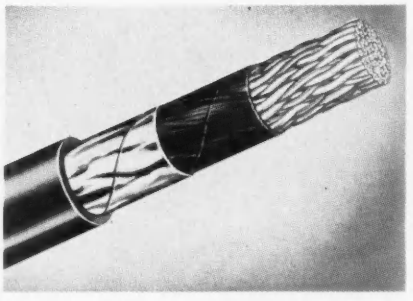
Cable has polyethylene sheath for extra-long life

In outside cable installations, you can side-step the ravages of weather, sunlight and temperature, saving yourself many dollars and hours in maintenance.

To do this, use the protection of the polyethylene sheath on Whitney Blake Telecable®. Telecable exchange area cable for aerial and duct use has polyethylene insulation **and** polyethylene sheath. No other thermoplastic material has given as good assurance of aerial cable sheath life expectancy as has polyethylene.

Specially treated to resist sunlight, the Telecable sheath has maximum chemical resistance, is not subject to environmental cracking.

Extremely light in weight, tough, yet flexible, it resists the stresses encountered during installation. You can expect top performance of Telecable for upwards of 20 or 25 years.



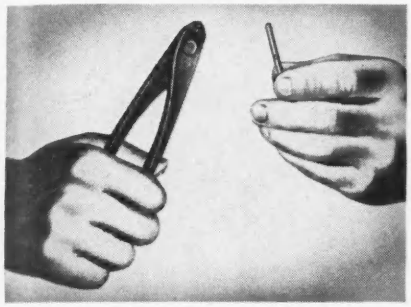
Telecable exchange area cable has outstanding weather resistance and transmission qualities.

Available in No. 24, No. 22 and No. 19 A.W.G. in sizes up to and including 404 pairs. For further information, consult your Stromberg-Carlson representative.

Splice it fast . . . and it *stays* fast

Here's how to make a quick splice that holds fast, even under the most intense vibration. In fact, your splice will outlast the conductor!

You need two items; a Nicopress sleeve, and the Nicopress tool that is designed especially for use with these sleeves. You simply butt the



This Nicopress 17-2 tool plus this Nicopress sleeve make better pair splices, faster.

bared wire ends together inside the sleeve, and you've got a joint that won't ever pull out! Quick and easy.

The alloy lining inside the sleeve is harder than either the conductor or the sleeve, and forms a joint that is stronger than the rated breaking strength of the wire itself. **And** it has a high, lasting conductivity.

Also—joints made with Nicopress sleeves are small and neat, so they may be applied on inside wires as well as outdoor lines.

Like to know more about Telephone Cable?

Then get your free copy of the Kennecott Telephone Cable handbook. This book contains a concise description of the construction of Kennecott Telephone Cable, and Textile Insulated Cable for terminating and interphone use.

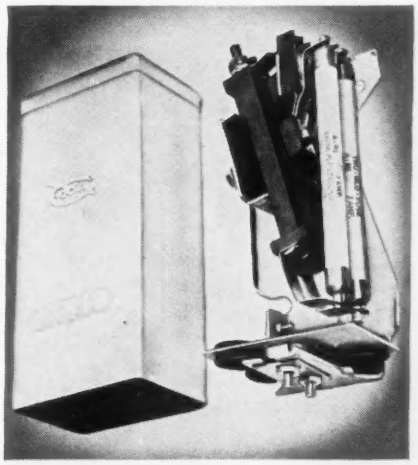
It also includes specifications for Paper Insulated, Dry (core) Lead Encased Telephone Cable, and tables showing lead thicknesses, approximate outside diameter, weights per thousand feet, and standard reel lengths.

Specify Kennecott — distributed by Stromberg-Carlson.

For rough service

You get protection plus with Cook Electric Company's type RO-9u single-circuit substation protector.

It is equipped with an H-20 protector unit mounted on a heavy-gauge formed steel bracket with weathertight grommets and a locking device for the hood.



The best available protector for single-circuit substations.

The rugged construction of the housing provides unusual durability. The high quality of the H-20 protector makes the RO-9u the best unit you can buy if you want high resistance to rough handling, abuse and damage from severe electrical discharges.

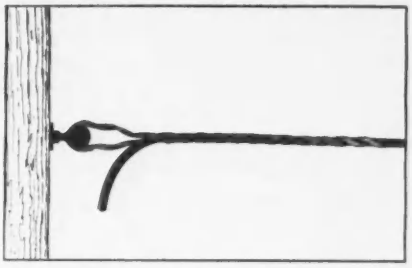
Dimensions of the unit are 6″ x 2″ x 3″.

Order from your Stromberg-Carlson representative.

Low radial pressure assures positive grip

You get positive gripping action on 2 No. 14 and 2 No. 12 Copperweld and 2-.083 Steel C Rural conductors with Preformed C Rural Dead-Ends.

Low radial pressure over the entire holding area prevents slipping or damage to conductor insulation. The multiple wire loop provides extra strength.



Neoprene coating over stainless steel prevents corrosion or abrasion.

PLP C Rural Dead-Ends are easy to apply by hand—no tools needed. You simply insert one leg through the eye-bolt, then wrap on the legs.

Ask your Stromberg-Carlson representative about Preformed C Rural Dead-Ends.

Use this insulator for rugged line construction

Hemingray Number 45 insulators with their square groove provide the ideal slot for your wire. Their reinforced construction under the groove reduces the possibility of breakage of the flange under the most severe ice loading conditions.

Double petticoat, square groove No. 45 insulator.

The extra long leakage path and double petticoat will reduce line losses and insure the strongest signal possible. These insulators are highly recommended for use on dial circuits where the strongest possible signal is necessary.

Hemingray insulators, the "World standard since 1870," are made by Kimble Glass Company, subsidiary of Owens-Illinois.

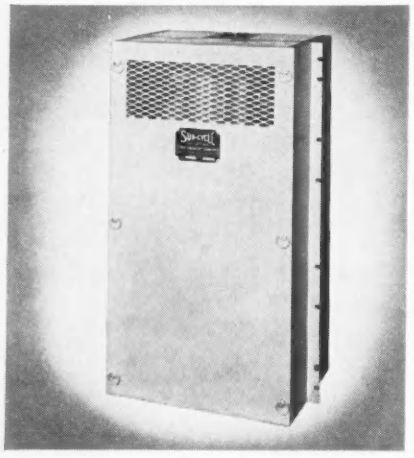
(*Continued on Page* 92)

(*Continued from Page* 91)

construction and maintenance digest

How to prevent cross-ring in decimonic systems

One good way to avoid cross-ring is to lock your ringing frequencies securely to the 60-cycle supply frequency. This eliminates frequency drift.



K-5 Sub-Cycle is available for 19" rack, as shown, or in other dimensions to fit 23" rack.

You can do this with the Lorain K-5 Sub-Cycle converter for decimonic ringing systems. This machine provides frequencies of 20, 30, 40, 50 and 60 cycles. These frequencies are rigidly locked into a fixed ratio with your 60-cycle input, by the following methods:

For 60-cycle ringing, a voltage regulator works directly off the input line. For 20 and 30 cycles, self-starting frequency dividers work directly on the input line. For 40 cycles, a frequency doubler is energized by the 20-cycle generator. For 50 cycles, a modulator combines the 20- and 30-cycle frequencies.

Accurate frequency control is just one of several advantages you get. The Lorain K-5 Sub-Cycle has no moving parts, no expendable components—your maintenance costs are nil, once it is installed.

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cited this multiple diversification as "one of the important factors in the gratifying record of the past and the excellent prospects for the future."

He pointed out, however: "We have always been committed to the view that expansion, either directly or by acquisition, is not beneficial unless it increases per share earnings."

Commenting on the relation of expansion to the current "tight money" situation, Mr. Rosenthal noted that Citizens Utilities will be able to finance a significant part of its expansion internally and at the lowest possible cost, because of its unique two-class common stock capitalization, with Series B shares paying cash dividends and Series A shares paying dividends in stock. "This insulates the Company to an important extent against restrictive governmental monetary policies, as well as the relative unavailability and high cost of funds," he said.

Mr. Rosenthal's statement was released in conjunction with the mailing to Series A shareholders of the second half 3½% stock dividend. Equal to 45¢ per share at market value on the date of declaration, this brought to 90¢ per share the aggregate market value of payments on these shares in 1956. The company's Series B shares also paid 90¢ per share during 1956. The letter to shareholders reported a 7.8 per cent increase in per share earnings for the 12-month period ending September 30, 1956, compared with the same period ending September 30, 1955. For the 9 months ending September 30, 1956, the increase from the previous year was 9.5 per cent.

C & D Names New Atlanta Sales Engr.

MARK C. POPE ASSOCIATES, Atlanta, Ga., sales representatives for C & D Batteries, has added Eugene L. Krauss to the staff. Mr. Krauss comes to C & D following eight years' service with the Storage Battery Division of Thomas A. Edison, Inc. He was a district manager for Edison.

A graduate of George Washington University, District of Columbia, Mr. Krauss had had a number of years' experience in the electrical field with District Electric Co., Wash., D. C., Potomac Electric Power Co., and Bull Dog Electric Products Co.

Still active as a lieutenant commander in the Naval Reserve, Krauss

EUGENE L. KRAUSS

also holds memberships in the Illuminating Engineering Society and the Military Order of World Wars.

Buckingham Mfg. Elects Riggs, Vice Pres., Sales

THE Buckingham Manufacturing Co., Binghamton, N. Y., has announced the election of Oliver L. Riggs to vice president in charge of sales.

Mr. Riggs started his career with the United Electric Light & Power Co. in 1921 and moved to New England in 1925 with the Lynn Gas & Electric Co. He has been active in various utility committees and was president of the Electric Lines Club in 1935.

Duff-Norton Advances Krueger to New Post

DUFF-NORTON CO., Pittsburgh, Pa., has announced the promotion of T. W. Krueger to sales manager of the Jack Division. He will be in charge of all railroad, industrial and export jack sales.

Ansonia Holds Annual Sales Meeting In New Plant

THE ANSONIA Wire & Cable Co., Ashton, R. I., formally introduced its sales personnel to the firm's new million dollar plant at the company's annual sales meeting.

President Alden P. Lunt and Vice President and Treasurer, W. F. Kircher addressed the group briefly, describing the greatly enlarged plant production facilities and the beneficial effect these will have on sales

efforts in 1957. Product diversification was among the key subjects discussed and it was pointed out that in this regard Ansonia is in the best position in its history.

The 1957 advertising campaign, which is the strongest ever scheduled for Ansonia products, was reviewed and a new technical and sales literature program was also introduced.

Among sales personnel attending were Frank Morris, railway cable specialist; Kenneth Gillette, telephone cable specialist; Raymond Blythe, cable splicing specialist; Walter Storer, Florida sales representative; William Johnson, Washington, D. C. sales representative; Arthur Schell, Virginia sales representative; Ralph Engsberg, newly appointed sales engineer; William Clifford and Fred Corcoran, sales department.

Walter G. Pearson, Sales Director, and Tilden E. Thompson, Ass't. Sales Director, were the executives in charge of the two day affair, which was highlighted by a special dinner meeting December 5th.

Automatic Names Waller Supt. of Engineering

MARSHALL S. WALLER has been named superintendent of engineering at Automatic Electric Co., succeeding Clarence J. Diehl, who has retired.

Mr. Waller has been with Automatic Electric since 1940. During

MARSHALL S. WALLER

that time he has held a succession of engineering and technical positions, including assignments in quality control and engineering, as staff engineer in the research and development lab-

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C & D Batteries are always ready to help keep your vital microwave system on the air, regardless of interruptions to normal power supply.
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of Conshohocken, Pa.
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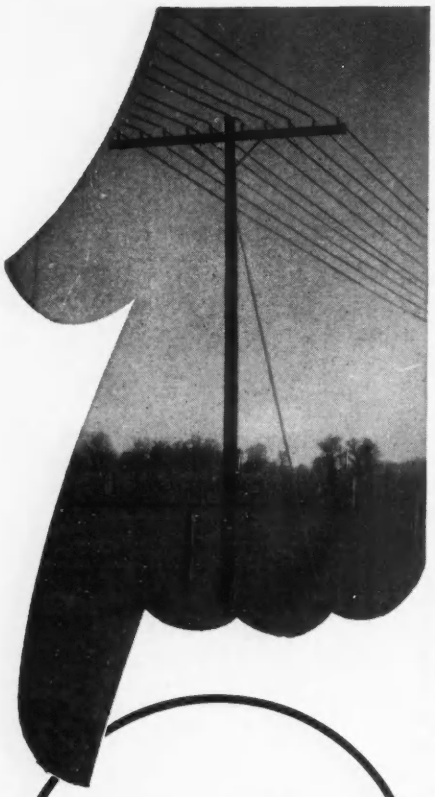
Tower photography courtesy RCA



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oratories and later in the commercial department, as production coordinator, as supervisor of engineering planning and scheduling, and as assistant superintendent of engineering, the position he held prior to his new assignment.

Mr. Diehl began his engineering career at Automatic as an installer in 1913. Between that time and 1945, when he was named superintendent of engineering, he headed the power engineering department, served as resident engineer for the company in Brazil.

Gould Appoints C. I. Simms Manager Of Utility Sales

THE APPOINTMENT of Carson I. Simms as manager of utility sales for the industrial division has been announced by Gould-National Batteries, Inc., Trenton, N. J.

Mr. Simms has served as a southern sales representative for Gould since 1951, and in his present position will supervise activities in the application of batteries to telephone service, electric light and power.

Automatic Electric Int'l Forms Mexican Organization

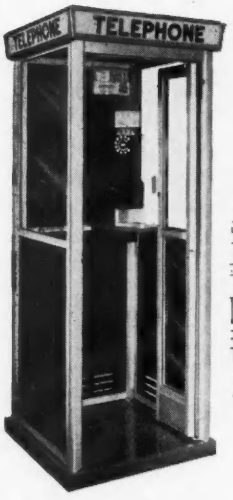
AUTOMATIC Electric International has announced formation of a new sales and engineer subsidiary in Mexico City, with offices at Ave. de Los Insurgentes Sur, Numero 100, Mexico 6, D.F., Mexico.

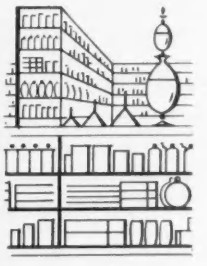
Known as Automatic Electric de Mexico, S.A., the new company has been established to furnish additional services in connection with Automatic Electric International's increased activities in the Republic of Mexico, and to provide expanded facilities for the distribution of products of the Automatic Electric manufacturing group, and Lenkurt microwave and carrier equipment.

The establishment of Lenkurt Electric de Mexico, S. A., a subsidiary of Lenkurt Electric Co., San Carlos, Calif., has previously been announced.

Luis Pitigliani, who formerly headed the Automatic Electric office in Buenos Aires, Argentina and more recently has been assigned to a staff position at Automatic Electric International's head office in Chicago, has been named vice president and resident general manager of the new organization. R. R. Sanders, who headed the carrier and radio group of

BEST... FOR DRUG STORES





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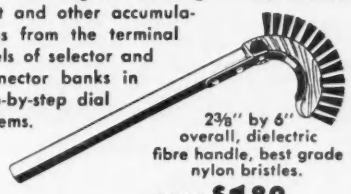

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Automatic Electric International in Chicago, has been assigned to Mexico City as Telecommunications Engineer.

Henry S. Dabdoub, Automatic's agent in Mexico since 1937, will continue in that capacity. Mr. Dabdoub will be a member of the Board of Directors.

William H. Perkins Telephone Veteran Dies

WILLIAM H. PERKINS, an engineer and power consultant with Automatic Electric Co., Chicago, Ill., for 48 years, died January 10 of natural causes at the age of 73. Mr. Perkins had assisted in the installation of Automatic exchanges and equipment from the Atlantic Coast to the Hawaiian Islands. Many communications engineers have been aided by the technical publications he prepared and the training programs which he helped organize.

Mr. Perkins joined Automatic Electric in 1903 as a power man and transferred to installation two years later. He traveled extensively for the company before being assigned to the company's power engineering group in 1919. He later served as assistant to the chief engineer and assistant to the head of export sales.

In 1933, Mr. Perkins was placed in charge of the Installation Department, but returned to his true interest — power engineering — in 1937. As a power consultant, Mr. Perkins contributed many valuable improvements to the power and signaling phases of the Strowger system. In 1933 Perkins and H. P. Mahoney conceived the idea of the Talbot G. Martin Award.

In 1950, the year he retired from Automatic, Perkins himself received the 17th Talbot G. Martin Award. He is survived by his widow, May Hull Perkins and a son, Robert.

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ADVERTISING, Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 3]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 4]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 5]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 6]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 7]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 26, Minn.* —[ADV. 8]

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 217 E. Main St., Spartanburgh, S. C.*—[ADV. 9]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 10]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 11]

REBUILT TELEPHONES & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 12]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 13]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., New Brunswick, N. J.*—[ADV. 14]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 15]

WIRE, Telephone, for all inside and outside uses — *Whitney Blake Co., New Haven, Conn.*—[ADV. 16]

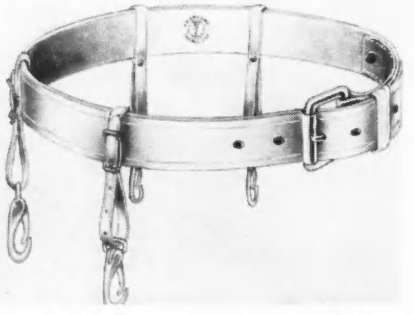
A TE&M Service Department

NEW PRODUCTS

HERE'S THE latest information on — (1) a new waist belt supporter; (2) new loud-ringing bells; (3) a preservative and cleaner for contacts; (4) "erector set" cabinets; and (5) a new battery. To obtain data on the New Products or Services described in the Buyers' Guide use the Reader's Service Coupon on page 97.

Waist Belt Supporter

MATHIAS KLEIN & SONS, Chicago, has announced the development of a new waist belt supporter. This supporter, commonly referred to as a gut strap, has four-point suspension with four separate snaps. Each strap is provided with a buckle to permit easy adjustment. Made of finest quality harness leather in sizes 36″ to 46″. Catalog No. 5208. For complete data, *Check New Product* 110.

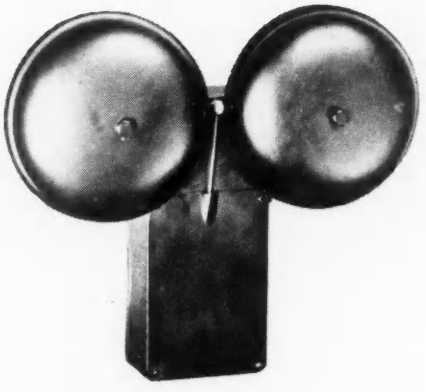


Loud Ringing Bells

SUTTLE EQUIPMENT Co., has announced a new series of 6″ loud ringing bells available in harmonic, synchromonic and decimonic frequencies at varying impedances.

The new ringer has a cast iron base with weatherproof baked enamel finish so that it is suitable for outdoor use as well as indoors. The heavy duty ringer movement provides a loud vibrant ring on the 6″, deep skirted, especially tempered steel gongs. A loud, clear ring is guaranteed, even in higher cycle frequencies.

According to the manufacturer, the Suttle 6″ Loud Ringing Gong is an ideal bell for factories, farms, processing companies, feed mills, municipal departments, manufacturing plants, transportation terminals — for all telephone company subscribers who need a bell that will ring out clearly above shop noises or at distant points. It is a rugged, heavyweight gong that will withstand bad weather or rugged shop conditions and last for years. (Shipped weight 13 lbs.) They need no adjustments, simply mount, wire, and use. — For complete data, *Check New Product* 111.



Contact Cleaner

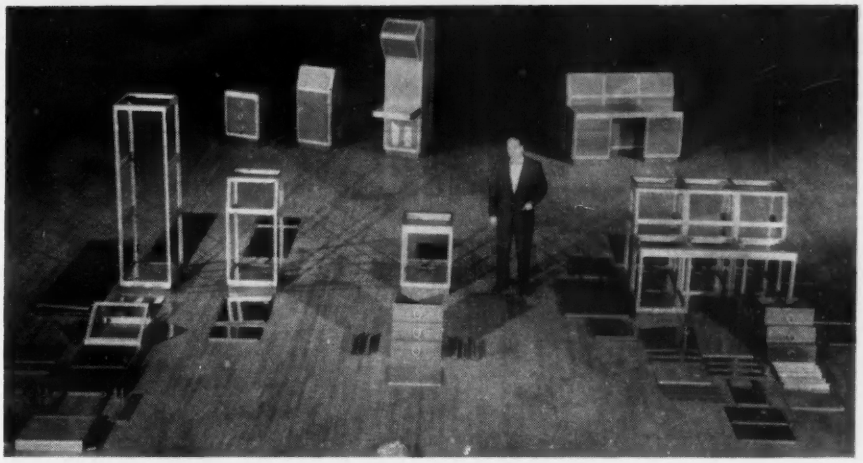
CAIG Laboratories has announced production of "Cramolin," a preservative and cleaner for contacts.

According to the manufacturer Cramolin reduces contact resistance by dissolving and removing non-metallic layers of oxide and sulphide. Among the features claimed for the new liquid are: (1) Reduces contact resistance to their minimum values; (2) reduces sparking of brushes on

commutators; (3) improves performance of contacts and collector rings; (4) protects against salt air and sulfidic atmosphere and will not absorb moisture; (5) applied on moving parts, Cramolin will stay on. Cramolin contains a chemical compound which is strongly attracted by metal surfaces and cannot be removed completely, even by high pressure friction; (6) fungus growth will not develop on Cramolin-films, because Cramolin contains mineral and synthetic ingredients only; (7) Cramolin is not aggresive on baked varnishes, although it may affect some nitor-cellulose lacquers; (8) Cramolin may be applied on old contacts without special precautions. All non-metallic layers, dust, resin, etc., will be dissolved and removed at once by rubbing it off, or by operating the contact several times; and (9) under general operating conditions Cramolin should be reapplied after two to three years (on high frequency and low current contacts). In highly corrosive atmosphere (containing acid, sulphide, etc.) reapplication should take place after one year. If the air contains unusual quantities of ammonia, contacts should be cleaned with the modified Cramolin. — For complete data, *Check New Product* 112.

"Erector Set" Cabinets

FOR THE first time, industry now can select from 75 standard "Building Block" components and 125 subparts to create consoles and cabinets to house equipment used in instrumentation, automation, automatic controls and electronics. Mass-produced modular units have been placed on the market by Elgin Metalformers Corp., whose president, Samuel K. Frankel, (above) demonstrates the step-by-step construction of the cabinets and consoles in the varied line.



New "Erector Set" Cabinets.

Using the components and skeleton frames shown in the foreground results in the completed units displayed in the background: (1) At left, background, a universal equipment cabinet. (2) Second from left, background, the sloped front console, designed for reading instrumentation and electronic controls. (3) Rack cabinet frame, background, shown with turret and writing top; this basic cabinet has a wide variety of uses for installation of equipment for automation and instrumentation. (4) The combination console, right background, which can be arranged from any number of varied basic units, is shown assembled in a side-to-side installation for a master control station. Factory sub-assembled, the cabinets merely are bolted together with a Phillips head screw driver, Tinnerman fasteners, and screws.—For complete data, *Check New Product* 113.

New Battery

BRIGHT STAR Industries, has announced production of the 10M Leakproof flashlight battery. The battery features: (1) steel reinforced double steel top and bottom which insures against leakage; (2) the use of double Polyethylene plastic film barriers for side insulation, which prevent power dissipation as well as leakage; and (3) the unit is electrolyte resistant and fully insulated against short circuiting. Other new features are strong fibrous kraft retaining walls and a brass cap for assured conductivity.—For Complete Data, *Check New Product* 114.

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ADV. 16.....

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HELP WANTED: Cable Splicer, experienced. Give age and employment history. Steady job for reliable man. Location, Southern Indiana. Write Box 9053 Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Illinois.

HELP WANTED: C. O. Equipment man, experienced in A. E. Company equipment, needed in exchange of 20,000 stations in middle west. Good working conditions with opportunities for advancement. Replies confidential. Please send qualifications and resume of experience to Box 9050, Telephone Engineer Publishing Co., 7720 N. Sheridan Rd., Chicago 26, Ill.

HELP WANTED: Equipment Engineer for exchange of 8,000 lines of step by step equipment in mid-western city. Progressive company, locally owned, offers permanent employment with more than the usual advantages. Pay commensurate with ability and experience. Please give qualifications, age, employment history and salary expected in first letter. Your reply will be held confidential. Write Box 9049, Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Illinois.

CARRIER SALES ENGINEER

Young engineer with experience or training in electronics or telephone transmission. Prefer man willing to accept eventual overseas or Latin American assignment. Write Box 9054 Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Illinois.

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CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

HELP WANTED: "Revenue Accounting Supervisor for Class A telephone company operating 16 exchanges in Northern Illinois. Salary commensurate with experience and ability. Ample oportunity for advancement. Employe pension and benefit plan in effect. Address reply to Mr. K. L. Schroeder, Northwestern Telephone Company, 304 West Main Street, Freeport, Illinois.

HELP WANTED: Bookkeeper Wanted for small but expanding dial telephone system. Must be qualified to assume complete responsibility for all bookkeeping procedures and general office work. Prefer settled lady over 35 who is looking for a job with future security, but will consider other applicants. Excellent opportunity for right individual. Cream Valley Telephone Company, Hawkins, Wisconsin.

HELP WANTED

PLANT ENGINEERS — For large Independent Telephone Company. Some experience necessary. In reply state age, educational and employment history. Address reply to Personnel Supervisor, Rochester Telephone Corporation, 10 Franklin Street, Rochester 4, New York.

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TO OWNERS OF SMALL CLASS A UTILITY COMPANIES — I have 20 successful years in telephone management, developing smooth operations and improving earnings. Will consider change if proposition includes stock purchase options, growth possibilities and first option on purchase of control. Write Box 9056 Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago, Illinois.

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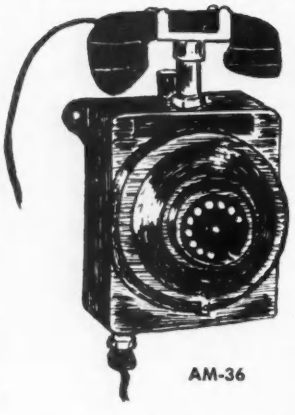

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SITUATION WANTED: Desire relocation in C. O. Equipment or better. 20 years continuous outside plant and equipment construction and maintenance. Satisfactory knowledge of carrier. Hold FCC 2nd class Radio-Telephone License. Certificate completion all relay training. Ability and experience to take charge. Write Box 9055, Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Illinois.

FOR SALE

FOR SALE: WESTERN ELECTRIC NO. 392 LOUD BELLS. Refinished and tested, with condenser — $6.00 each. Write Telephone Equipment, Inc., Montrose, Mich.

FOR SALE: North Electric CX200 Broadspan dial switchboard. Equipped 150 lines 10 links 12 trunks 2 PBX groups. Full selective syncromonic ringing. Two 6 amp. chargers. Ringing machine. Out of service now. Priced $11,500. As is, where is. Located Sunray, Texas. Contact Lucian Spencer, WEbster 5-2198, North Plains Telephone Company, Dumas, Texas.

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6 2½ Ton GMC 6 x 6 Trucks w/Hard Cab and Chassis
New Cable Reel Trailer with or without Electric Brakes
6 Dodge Line Trucks w/Winch, Boom, 5 Man Cab, Reconditioned $2,150.00
MISCELLANEOUS—Ladder Trucks, Installer Trucks, Trenchers, Lineman's Tools, Used and Reconditioned Earth Boring Machines, and Pike Poles

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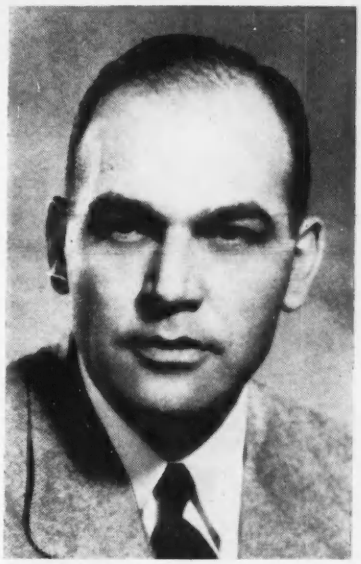
Book Reviews

"Establishing An Integrated Data Processing System:" Published by the American Management Association, 1515 *Broadway, Times Square, New York* 36, *N. Y. Special Report No.* 11; 183 *pages; Price*: $4.50.

Every company — large or small — has felt the increasing complexity of record-keeping and data analysis. To function at maximum efficiency, top management needs to control and coordinate data required for efficient decision-making. This need has led to the concept of *integrated data processing* IDP, which has been defined as the systematic organization of every data processing operation in the company — with *or without* the installation of a costly electronic system.

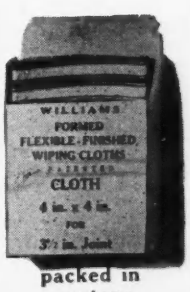
IDP has posed many questions, and this AMA Special Report supplies many of the answers. In basic, non-technical language, it explains how companies can establish integrated data-processing systems. The IDP network is described in detail — from preliminary approaches to actual installations of the system and its implications for future operations. Reports of actual company experience (*Metal Goods Corp., Eberbach & Son Co., etc.*) demonstrate how integrated data processing can help executives to obtain accurate information quickly.



HARRISON VAN AKEN, JR., has been named general manager of the newly-created General Electric Communication Products Department. Van Aken previously headed the company's Communication Equipment Section. Functions of the Communication Equipment Section are absorbed by the new department which will have responsibility for the manufacture and sale of mobile radio, microwave radio relay, radio traffic coordination units, power line carrier equipment, terminal equipment and other communication systems.

Cost Record Book

THE 35TH ANNUAL edition of the White-Autocar "Cost Record Book" has been issued by The White Motor Co. The book provides a comprehensive, simple system of analyzing truck operating costs.



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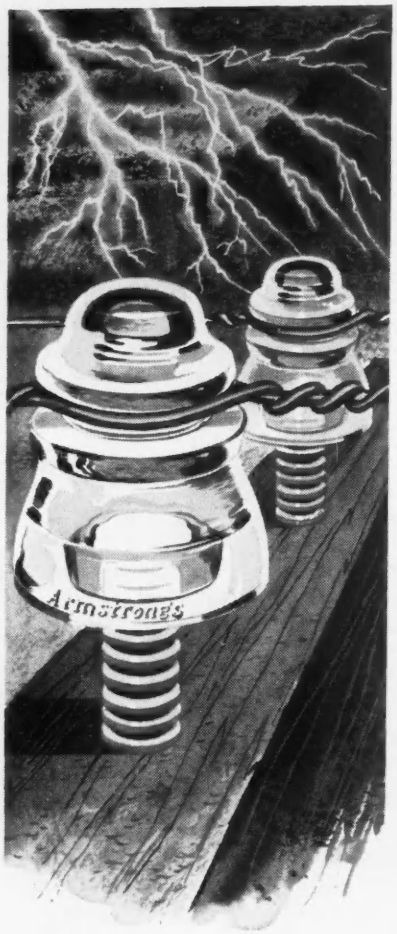

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Laboratory tests and actual field experience prove Armstrong Glass Insulators resist weathering, thermal shock, punishing line strains . . . and still perform at peak efficiency. These all-weather insulators, molded of heavy industrial glass, stay on the job and save you maintenance costs. For information about the models best suited for any given application, write Armstrong Cork Co., Glass and Closure Div., 295 Fifth Ave., New York 16, N. Y.

Watch Armstrong Circle Theatre every other Tuesday evening on NBC-TV

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GLASS INSULATORS
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North Electric Names Snyder, Purchasing Agent

Appointment of Calvin L. Snyder as purchasing agent, North Electric Co., Galion, Ohio, has been announced by Lloyd Bender, vice president.

Mr. Snyder has been associated with North Electric since 1946, when he joined the purchasing department as an expediter. Early in 1948, Mr.

C. L. SNYDER

Snyder was promoted to the office of buyer, and in mid 1952 was named assistant purchasing agent, a position he held until his recent appointment.

Tupica Named Manager Cook Wirecom Division

MICHAEL F. TUPICA has been promoted to manager of the Wirecom Division of Cook Electric Co., Chicago. He was formerly sales engineer for Cook Electric's Midwestern Sales Division.

Before joining the company in 1953, he was sales engineer for Unity Furniture Mfg. Co. Earlier, he served with Courtland Mfg. Co. in a similar capacity. From 1939 to 1941, he was lay-out and welding department supervisor for J. W. Allen Co.

Automatic Names Waller Supt. of Engineering

MARSHALL S. WALLER has been named superintendent of engineering at Automatic Electric Co., succeeding Clarence J. Diehl, who has retired.

Mr. Waller has been with Automatic Electric since 1940.

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For greater uniformity... greater rigidity!

Now...Chance Pike Poles are made by bonding together carefully selected Douglas fir boards. Laminated Pike Poles have many advantages over the old, single board pike pole. They're more rigid. They're more uniform. Each board reinforces the other.

SAFETY PIKE — *Point can be reversed as shown in circle, for safety in handling and transporting between jobs.*

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Chance *laminated* Pike Poles are available with tough Maplac plastic coating. Splintering of the wood is eliminated. Lost-time hand injuries, caused by splinters, are avoided.

IT PAYS TO BUY HIGH QUALITY IN A PIKE POLE. Only on a Chance pike pole will you find the steel reinforced butt which protects the end of the pike. And only *laminated* Chance pike poles are available with Maplac protection.

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A DIVISION OF GENERAL DYNAMICS CORPORATION

News and views of Independent telephone people. VOLUME 5, NO. 11 • FEBRUARY 1957

Planned with perspective . . . presented with pride:

The new Greenville, Ohio, Telephone Center

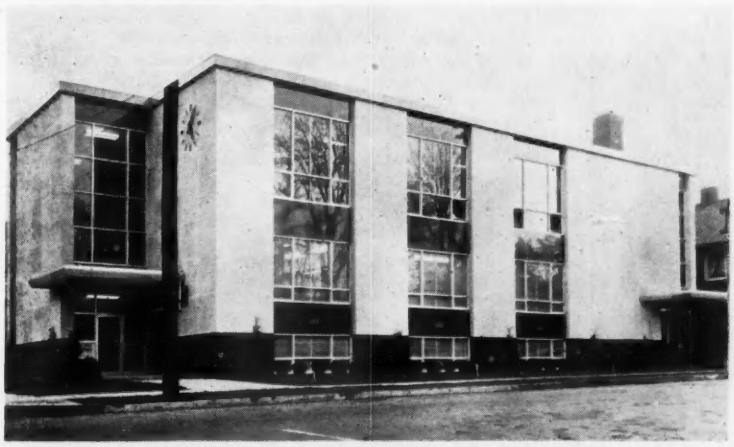
Mr. Ralph F. Lucier, president of the Ohio Telephone Service Company, and Mr. T. C. Thompson of Stromberg-Carlson at Greenville, Ohio, where insulation strips were pulled from main frame to inaugurate dial service on October 21, 1956.

The Ohio Telephone Service Company, with general offices in Warsaw, Indiana, was proud to place its new building at Greenville, Ohio, on display during an Open House last November. Large as the building is — and this organization is accustomed to thinking and planning at large scale — the Greenville traffic personnel who directed the "tours" had to perform wonders in "alternate routing" as they welcomed approximately 3,500 guests to the new telephone center.

Greenville businessmen — a virtual roster of Who's Who in commerce and industry; sixty or more invited representatives of the telephone industry in Ohio and Indiana; officials of the Ohio Independent Telephone Association and the Ohio Farm Bureau Federation were among those who gave a highly complimentary appraisal of the new office.

But most important to Mr. Ralph Lucier, president of the company, and Mr. H. F. Clapper, district manager, was the enthusiasm of the subscribers . . . . their keen interest in the XY-Dial equipment, the new 10-position toll board, and the well-appointed business office indicated that they appreciated this opportunity to learn more about the company which serves them. The customers had been promised the finest in telephone equipment and service — and they liked seeing the proof of it.

Historically the Greenville telephone system goes back to 1880 when the Ohio Bell company opened an exchange in a department store. At the turn of the century a competing home-owned company was organized and in its first year installed what was then an impressive 240 telephones. In 1911 the Home Telephone Company absorbed the Bell holdings; by 1914 it listed approximately 4,000 subscribers in ten exchanges throughout Darke County.



Imposing office of Ohio Telephone Service Company.

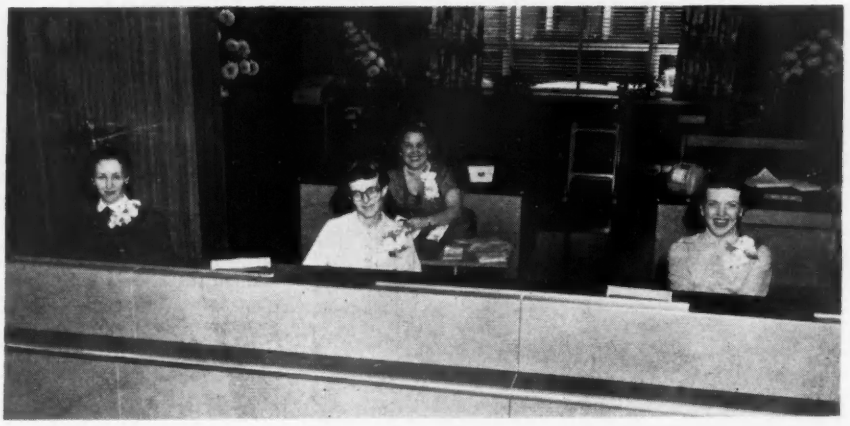
Greenville is toll and service assistance center for a large surrounding area. Operators are delighted with the 10-position Stromberg-Carlson No. 3 Toll Board.

Greenville opens its house . . .

R. E. Daniel (center), chief engineer of the Ohio Telephone Service Company shows the wire chief's test board to Verne Robinson and William Fitt of Winchester, Indiana.

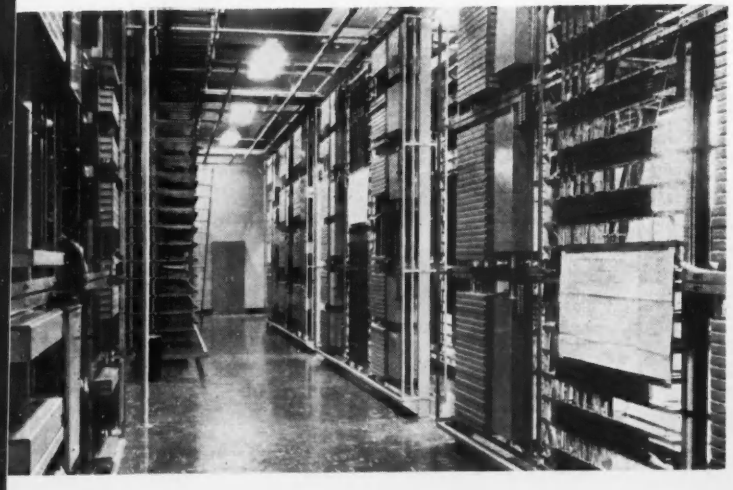
Operation of the Greenville exchange as part of the Ohio Telephone Service Company began in 1931 with 2,100 local subscribers; at the dial cutover last October this number had increased nearly 300%. Daily local calls reached the 30,000 figure last summer; more than 2,000 long-distance calls were then being handled daily through the toll board — an increase of 100% over the 1950 toll count — as well as some 3,000 free service calls between exchanges throughout Darke County.

To Mr. Lucier, Mr. Clapper, Mr. R. E. Daniel and the many others who have brought the Greenville project to completion, the community extends its grateful appreciation.

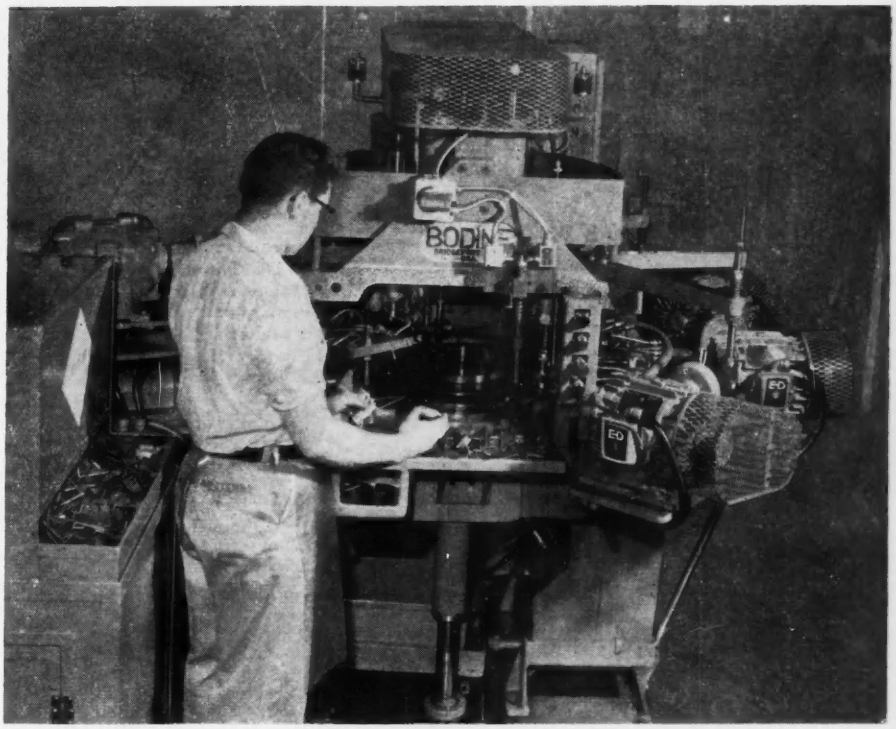


Combining the twin assets of good taste and efficiency, the business office provides a bank type counter-desk arrangement and is equipped with latest machines to give prompt, courteous cashier service. One of these machines provides for microfilming of toll tickets, and has already aroused interest among neighboring telephone managers.

6,000-Terminal XY-Dial office at Greenville, designed to provide for the expansion which will surely come.



Catching a breather at Greenville open house festivities. From left: Ralph Lucier, of Warsaw, Indiana; Col. Gustav Hirsch of the Gustav Hirsch Organization in Columbus, Ohio, and a director of United Utilities, Inc.; Ed Kimball and Le Roy Purdy of the General Telephone Co. of Ohio, Celina, Ohio.



Frames for the Stromberg-Carlson "A" and "C" type relays are drilled, countersunk and tapped in this variable-stage, cyclical machine. The change-over from one set of 13 operations required for the "A" frame to the entirely different set of 18 operations used on the "C" frame is accomplished in 15 minutes.

Mechanization releases people for higher-skilled jobs

by J. W. Sands, Production Engineering

In the highly competitive market facing American industry today, success is the direct result of a quality product produced efficiently. Basic to this production efficiency is tooling, with newly designed machines taking over many of the repetitive operations that lend themselves to mechanization — producing more parts per hour, of better quality, with less handling, and cutting down or eliminating operator fatigue.

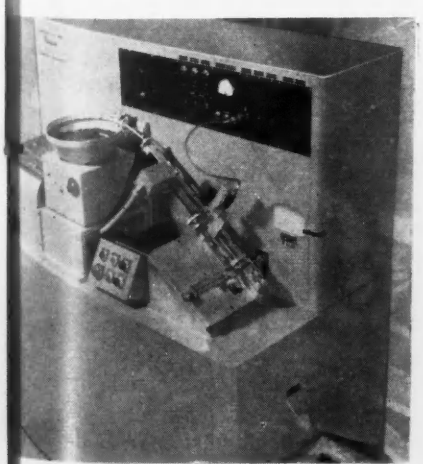
Does this mechanized approach create a labor problem as a by-product? At Stromberg-Carlson the very opposite has been the case, for with the greatly expanded demand for its many and diverse products in telecommunications and electronics, the principal drag on increased production has been a shortage of highly skilled operators to perform the many tasks for which no machine has yet been devised.

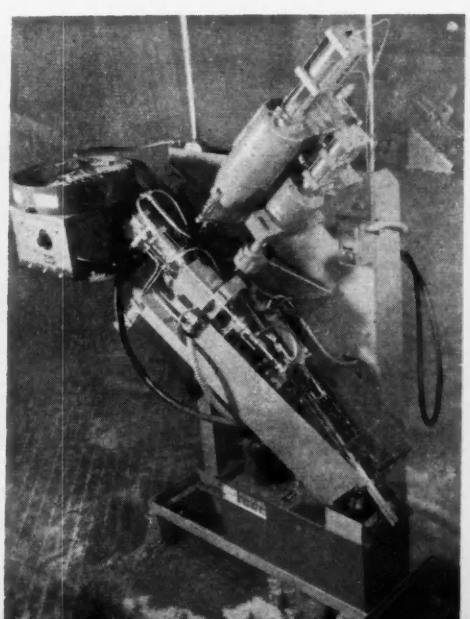
This article is a brief discussion of three of the newer machines recently put into operation to speed the flow of telecommunication equipment to our telephone customers.

The *Bodine* machine completes a series of drill, countersink and tap operations on relay frames at the rate of 750 pieces per work hour. Each stage in the full cycle may be made operative or by-passed, giving the required flexibility. The machine is self-aligning and even does its own inspecting. Electro-Dynamic motors — product of one of the other divisions of General Dynamics Corporation — were specified for the driving power of the 4-spindle and double-spindle drill heads.

The automatic In-Line machine used to drill, countersink and tap holes in ringer armatures, hopper feeds the part one way (by air blast indexing) into a track controlled by a micro-switch. As the part slides down the track, the required drilling operations are performed at each station, including a hole with 10° angle for insertion of the clapper rod.

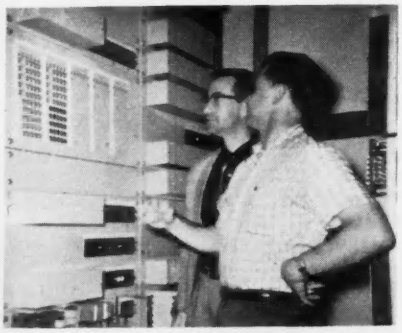
The Arlin sorter is primarily used for parts requiring 100% inspection. While presently used to check lengths only, this machine is capable of checking inside and outside diameters as well, in the same inspection cycle. Electronic controls provide sensitivity to distinguish to the fifth decimal place (.00003 inches), sort into three categories (pass, over and under), and perform all this inspection and sorting at the rate of 5,000 to 10,000 units per hour depending on length of the units being sorted.





The sorting machine (above) is presently used to check lengths on brass or hard rubber bushings used in relay spring pile-ups. Machine at right performs multiple drill, countersink and tap operations on the ringer armature.

Mr. D. H. Steele, general manager of the Citizens Utilities Company, Redding, California, places first call over the Elk Grove XY-Dial system. Call was made to company president, Mr. Richard L. Rosenthal, in Stamford, Connecticut; reported complete success in cutover.



As commercial manager of Elk Grove office of the Citizens Utilities Company, Mr. L. L. Thomas is also interested in the supervisory alarms and controls, as shown by Dan Monaghan (foreground), sales representative for Stromberg-Carlson.

From pine to palm . . . .

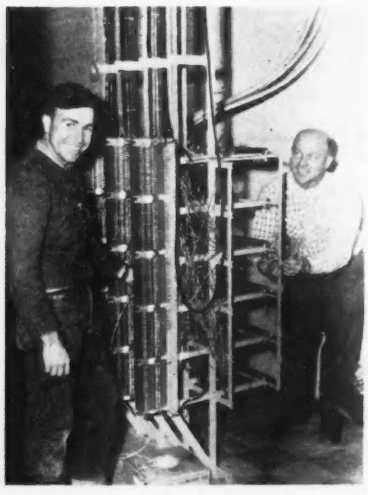
Western customer

Majestic mountains stealing fleeting glances at their image mirrored in gem-like bowls of liquid turquoise; amazing abundance of verdant valleys where groves and fields provide such ample store of good living; the unfathomable mystery of the desert, waiting to be wakened by those who will take time to understand her . . . whatever your taste, this is picture-postcard country, and more and more people are finding it's the end of the rainbow for them.

The *Gem State Telephone Company* of Cascade, Idaho, had only to look around them to choose a name. However, Harry Bean, president, wanted to vary the diet of beauty with some man-made services . . . especially telephone service. Hardly a "big operator" at first — the company had a total of 15 lines in 1929 — Harry Bean has seen a growth to over 1200 subscribers in five exchanges.

Standing at the gateway to America's greatest remaining wilderness, the Gem State Telephone Company provides the communication arteries without which the logging, mining and tourist business could not operate. Especially in the summer, when transients push the population up 500%, long-distance revenue often outstrips receipts for local service.

Elk Grove, California, is one of the twenty-five exchanges operated by the Citizens Utilities Company of California, with headquarters in Redding. This company serves the northern portion of the great Central Valley where agriculture, logging, mining and manufacturing combine to



Smiles of accomplishment! It isn't the size of the installation but the thought and labor which measure success. D. G. "Grid" Rowles, (right) general manager of the Gem State Telephone Company, and J. Morrell, plant superintendent, test last connections at M.D.F.

Harry Bean, president of the Gem State Company of Cascade, Idaho, is at the right in this photo, just as he proved himself 100% right in bringing good telephone service to his communities. With Mr. Bean (left to right) are Eugene Sullivan and Bill Bailey of Stromberg-Carlson and "Grid" Rowles, general manager for Gem State.

A page from your Editor's album.

California-Pacific Utilities built this fine building to house both their new XY-Dial exchange at Needles, California, and their electric and gas services.

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lately in the news

attract thousands of new residents.

A gigantic capital improvement program has been under way for some time, so that with the conversion of Elk Grove to XY-Dial early last fall, the complete system is now 85% dial operated. It is the expectation that the goal of 100% dial will be reached during 1958.

Needles, California, used to be the last water stop for westbound caravans before starting across the Mohave Desert. As prairie schooners gave place to trains and motor vehicles the strategic location of Needles is still its main support; it is estimated that over 50% of the city's income is directly attributable to highway traffic on U. S. Route 66.

Just across the Colorado River a large area of former desert has been brought under cultivation; last year the first good crops of cotton, melons and alfalfa were harvested. The river is also the scene of the annual Colorado Marathon — boats start at Needles, race down to Parker and back for a total of 115 miles.

Growth for both the city and the California-Pacific Utilities Company has been steady. Eighteen years ago a 1-position manual board with a single trunk to Kingman, Arizona, was adequate. When the present XY-Dial system was cut into service this December, the company listed over 1,500 subscribers and looks confidently toward the future. Mr. D. N. Baker, division manager of the Needles district, handles through his office all electric and gas service as well as the telephone business.

W. W. Stahl (center), general manager of California-Pacific Utilities, and Frank Rogers (left) of company's San Francisco office congratulate Stromberg-Carlson installation foreman R. J. Smith on fine job completed.

Mr. D. N. Baker, division manager of the Needles, California, district of California-Pacific Utilities is in the center of this group of well-wishers. Left to Right: Melvin Van De Mark, W. W. Stahl, both of California-Pacific Utilities; M. H. Hart of Citizens Utilities in Kingman, Arizona; K. J. Kelly of Stromberg-Carlson; Frank Rogers and Mr. Baker of California-Utilities; E. R. Sears, Jr. and E. F. Sullivan of Stromberg-Carlson; F. K. Brown and R. Gentry of Pacific Telephone and Telegraph Company in Los Angeles; K. J. Johnson of Stromberg-Carlson; Earl Sutherland of California-Pacific Utilities.

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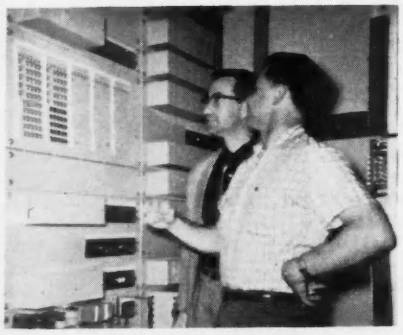

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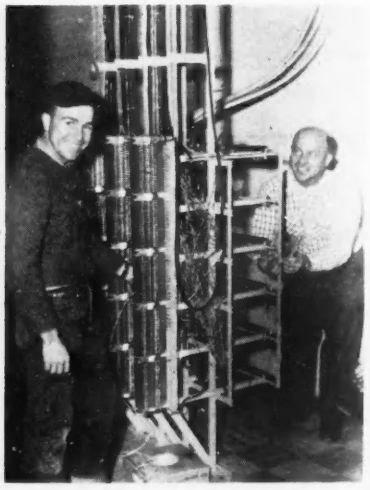

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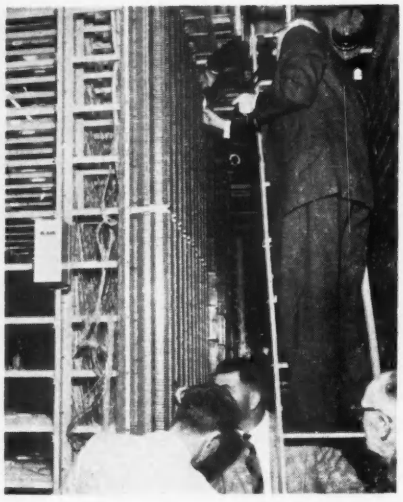
Knoxville, Iowa, served by Be

Earle Bellamy assures himself that all is ready for the dial cutover at Knoxville, Iowa.

Mrs. Walter Burns (Mary Bellamy) pulls first cutover strip as Mayor Larson of Knoxville stands by.

Harold Cecil (center), equipment supervisor, compares notes on test turrets with Arthur Kelly (foreground) of Farmers Mutual Telephone Company, Clarinda, Iowa.

Customer instruction in dialing technique demonstrated by Mrs. Cora Mick and Miss Halene King.



"Can't stop to look pretty now, son! Don't you know this is a cutover we're having?"

There's a lot of good XY-Dial equipment represented here. Left-Right: Earle Bellamy; Mr. Arthur Sanders of New London, Iowa; Mr. William Daubendieck of Jefferson, Iowa; Mrs. Earle Bellamy; Mrs. Ed Carlson of Creston, Iowa. Cutover drew managers from all over state.

Jim Bellamy, as secretary-treasurer, has been known to sit at a desk, but prefers to work right along with his team.

Mrs. Hester Peterman, a district supervisor for Northwestern Bell Company, is fascinated by the efficient Stromberg-Carlson Toll Board, demonstrated by Mrs. Florence Barnes (seated left), assistant chief operator and Mrs. Nina Carmack, chief operator.

Merv Wise, Stromberg-Carlson installation foreman, has to know his color codes in this maze of wires at the main frame.

Bellamy Family for three generations

The name Bellamy stands high in Independent telephone circles. For three generations this family has served Knoxville, Iowa, and the counties of Marion and Monroe; in each of these generations the president of the company was chosen by his fellow telephone managers to serve as president of the Iowa Telephone Association.

James S. Bellamy, grandfather of the present owners, founded an electric company in 1887 and organized the telephone business as an adjunct to this operation in 1898. In 1902 he installed one of the very first common battery switchboards ever built. His sons followed him into the business, Earle D. Bellamy carrying on the telephone end of it as a separate enterprise after 1926, until his death in 1946. Earle G. Bellamy and his brother James had been well trained in telephony by their father — stepped forward to bring about the greatest progress the company had experienced in its long history.

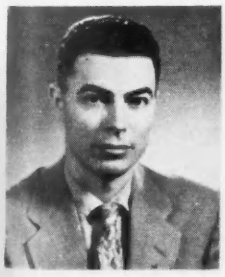
The dial program of this company actually began in the smaller town of Melcher, where an XY-Dial system was placed in service early in 1953.

Earle Bellamy of Knoxville, Iowa (center), with Frank Dixon his plant superintendent and long-time associate, watch Mrs. Morgan disconnect last call on old manual board.

Knoxville presented more of a challenge, since it is the toll center for a wide area and the conversion had to be planned to include nationwide operator dialing and eventual direct distance dialing. Now that the principle exchange is dial-operative, the program for the two remaining exchanges will be completed soon.

The more than 4,000 subscribers of the Bellamy Telephone Company like the tradition of good service they have experienced over the years; expect the future to be even better.

Recent Promotions At Stromberg-Carlson



Louis W. Droel

Malcolm P. Herrick

Louis W. Droel this fall became Assistant Development Director of the Telecommunication Engineering Department.

Mr. Droel has been with Stromberg-Carlson ten years. During this time he has progressed from apparatus engineer assigned to relay design, to group head, section head and engineer-in-charge of Electro-Mechanical Engineering. In this latter responsibility the Model Shop was also under his jurisdiction. During this ten-year period a round dozen patents have been issued in his name. His new position is broadened to include developments in the field of electronics, including carrier/microwave and electronic switching.

Born in Minneapolis, Louis Droel received his engineering degree at the University of Minnesota where he graduated "with distinction," and is currently a licensed professional engineer in New York and Illinois. While working for a telephone manufacturing company in Chicago he was married to Alice Melvin; the Droels now have four children.

Malcolm P. Herrick is Assistant to the Vice President of the Telecommunications Division, with responsibility for policies in marketing industrial products such as the Pagemaster selective paging system. You'd recognize his Maine origin in your first conversation with him; his electrical engineering degree was from the University of Maine.

Joining Stromberg-Carlson in 1944, Mr. Herrick worked in radio-television engineering and was chief engineer of that division of the company from 1953-55, when he became a staff assistant to the vice president in the Telephone Division.

"Mac" Herrick is a senior member of the Institute of Radio Engineers and of the Radio-Television-Electronics Manufacturers Association. For relaxation his hobby is riflery through the National Muzzle Loading Rifle Association.

Copake Telephone Co. at three-quarter mark as

Pine Plains, N. Y., converts to dial operation

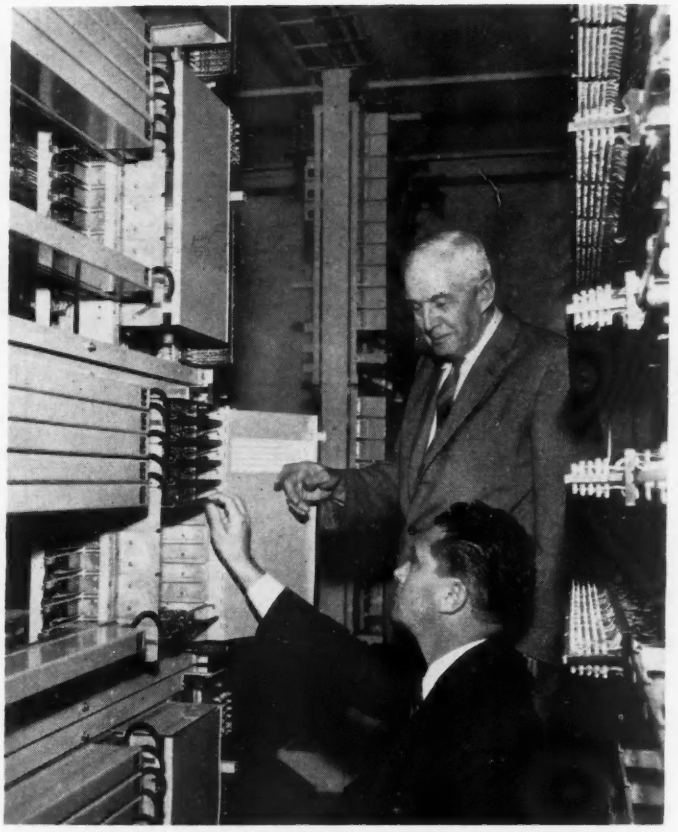
You have to know middle initials to be sure of your man in this company, for the story of past and present progress is pretty much the work of two men named John: John D. Ackley, the founder, and John B. Ackley, now president and manager.

"Just call me Ben," offers the younger man, although he still prefers to sign his name "John."

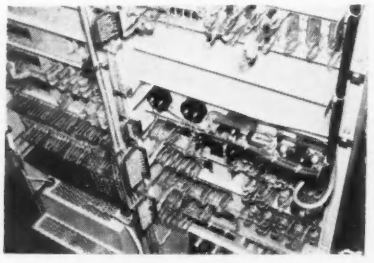
John D. Ackley took a little time out to celebrate a half-century of activity in the telephone business two years ago — just about the time his second XY-Dial office, at Copake, was being cut into service. In addition to seeing the normal changes from "hedgehopping magneto" to common battery to dial, he had in the early days active competition from another company in the same service area. The competitor owned the toll line to Pougkeepsie, but John Ackley gave his customers better service. Eventually this paid off, and Mr. Ackley became free to develop the entire service area into one strong company.

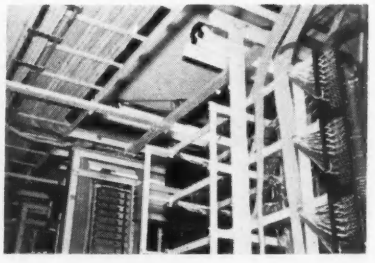
Ben Ackley got his telephone training by heredity, but has made it much more than an inheritance. Unwilling to accept anything less than top rating for his company he has, since assuming the managership, pushed rapidly forward on a dial program now three-quarters completed. This includes Hillsdale (XY-Dial June 1953), Copake (XY-Dial December 1954), and in November 1956 Pine Plains. The fourth — and largest — exchange, Millerton, is about ready for its turn.

The elder John Ackley can be assured that the family tradition of good telephone service will be continued indefinitely.

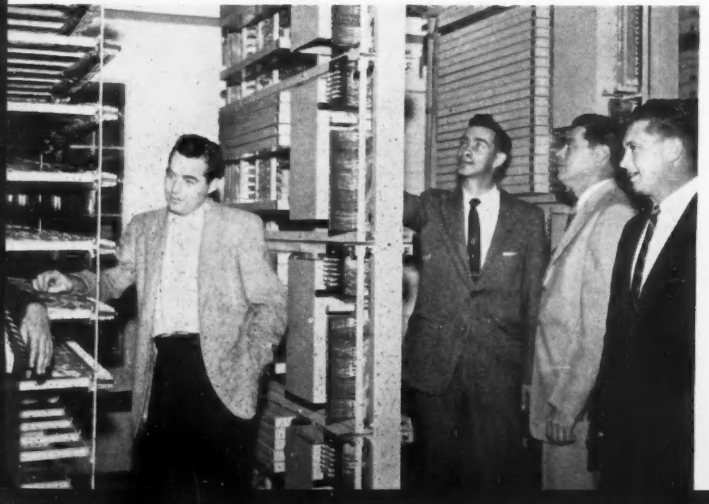


Like father, like son!
The two John Ackleys of the Copake Telephone Company, team up as they always have, to complete checking of their new XY-Dial exchange at Pine Plains, New York.





Birds-eye view of portion of the power and supervisory bays; worms-eye view of the neat cable runs in the Pine Plains dial office.



The immense satisfaction of a good job complete. Coit Henly, Stromberg-Carlson, congratulates Dan Hagen, installation foreman, while in group at right Bob Clark, Stromberg-Carlson sales representative, points out an exclusive feature to Cecil Plase, wire chief of Copake Telephone Company. John B. Ackley, president and manager, just looks pleased with things in general.

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GENERAL DYNAMICS CORPORATION
Rochester 3, New York
GEORGE B. FORBES, *Editor*

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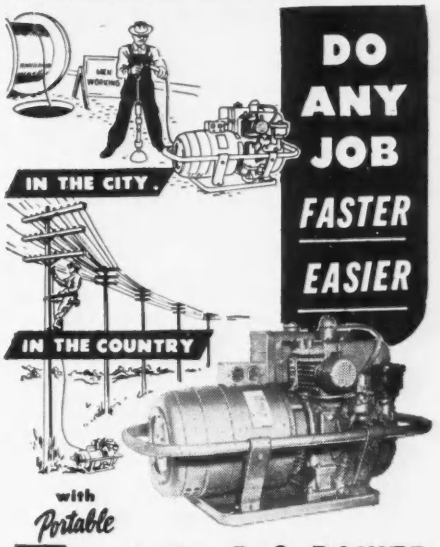

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Sporting Note

TELEPHONE users in Central Iowa are no doubt greeting the winter with cheers. The advent of freezing temperatures and icy streams insures better telephone service for them. With the river frozen over, there will be an end to fishermen casting their lines in search of the wily trout. And far too many inaccurate fishermen, the subscribers had complained to the State Conservation Commission, have been casting their lines over the telephone wires, shorting them out and interrupting telephone service.

Logical Question

MICHIGAN telephone customers evince a pleasing interest in what's going on in their telephone company. At least we gather that impression from an *Illinois Bell News* story that come out following the recent notice that the prefix PLeasant had been assigned to Saginaw numbers.

An operator in Flint received a call for Saginaw, sans prefix. She reported, "Saginaw numbers now have a Pleasant prefix, sir."

"Really, operator?" rejoined the customer in a tone of deep interest. "What is it?"

No Limits

PEOPLE who are inclined to cast doubt on the ability of a telephone man to respond to any situation, are invited to draw their own moral from this story from *Ohio Bell's News Service.*

A repairman was working on the telephone in the office of the principal of a Youngstown school. He had preempted the principal's seat while he was out of the room, when a first grader entered with a tale of woe intended for the principal.

The telephone man listened sympathetically. He offered some advice which took care of the situation and gave a handshake and a pat on the back to the first grader, who was satisfied and marched back to class confident that *that* was settled.

No Mistake

WHEN A TEXAN says something, he means it, Pardner! And just so there would be no mistake, a gentleman in Tyler, Texas, was really explicit when he asked for telephone service. His request — take it or leave it — was for "*one of them single, individual, private nobody-else-on-it lines.*"

The Most Courteous Companies

IN THE COURSE of some 150 interviews around the country, executives were asked by *Fortune* to nominate companies of outstanding courtesy. Preponderantly, the selections were provincial in character — neighboring companies, local banks and utilities, and insurance offices. And in almost all cases the regional telephone company came in for a bow. But of nationally known companies, the following ranked among the top in number of mentions: Brown-Forman Distillers, Crown Zellerbach, Du Pont, General Electric, General Motors, Monsanto, J. P. Morgan & Co., Reynolds Metals, Standard Oil of California, U. S. Steel.

The most discourteous companies? The executives could think of hardly any specific nominations. Several executives, however, did offer a blanket indictment of the manners of chain-store companies (particularly in treatment of suppliers and salesmen) and some grumblings were heard about construction companies, mining companies, and shoe manufacturers. Surprisingly, a prominent brewing company was twice cited for bad manners. This is Gemutlichkeit?

"Gabbing"

HAWAIIANS and Alaskans seem to have been busy talking up statehood in 1955, according to data in the annual booklet, "The World's Telephones," issued by American Telephone & Telegraph Co. The 17 page brochure lists a variety of statistics for the preceding year, explaining that it takes a year to get the necessary figures from some countries.

Under "Conversations," it reports that Hawaiians had 647.2 chats per capita in 1955, followed by Alaskans, with 572.4. The United States reported 409.3, Canada 415.9. Canada led the fourteen nations having 1,000,000 or more telephones in the conversation department.

It was also noted that Washington, with 64.2 telephones per 100, was the greatest telephone city, followed by Atlantic City with 62.8 and Los Angeles with 60.3. New York had only 48.3.

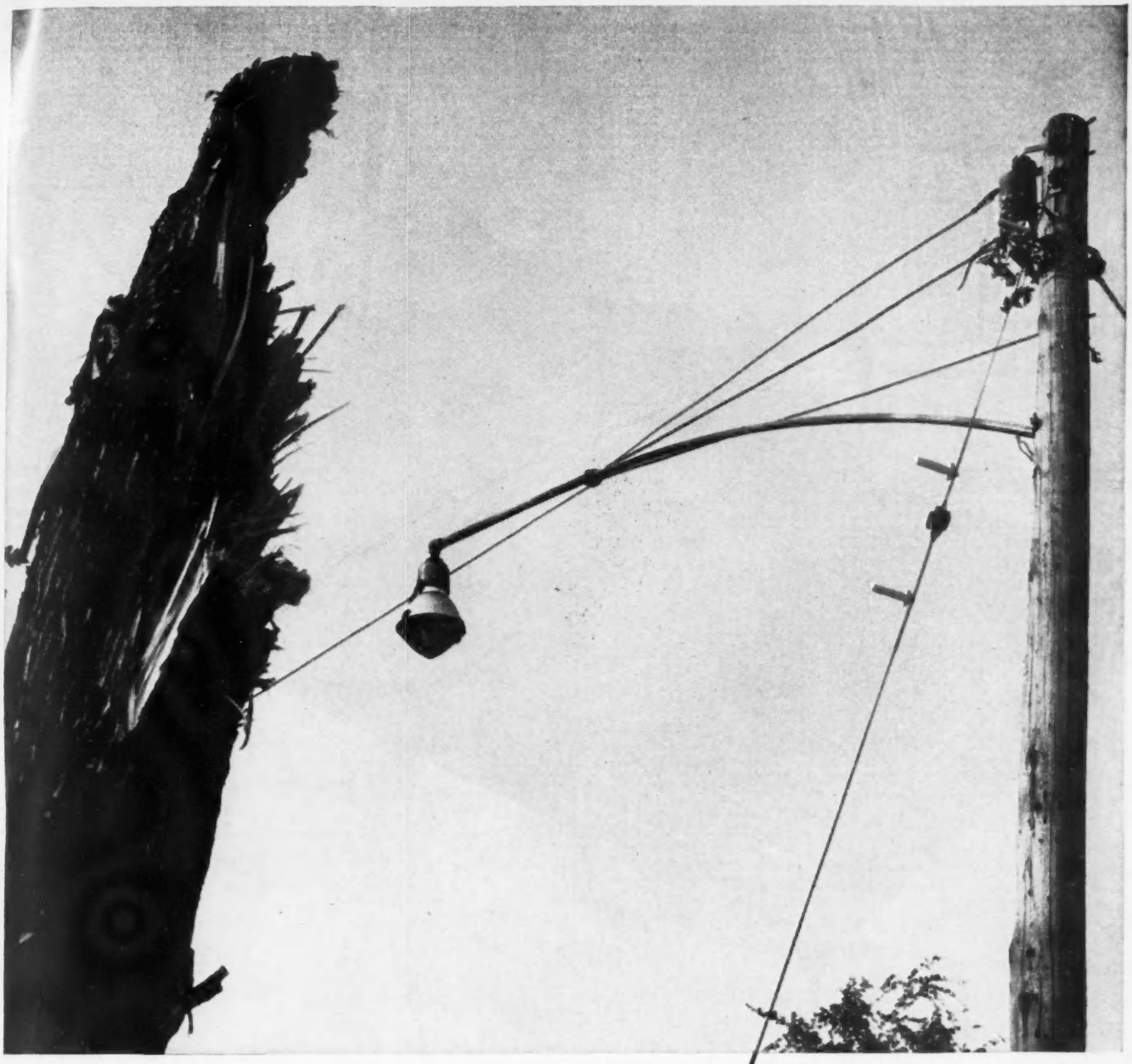
Spain and West Germany joined the million-or-more telephone list, helping to swell the world's total to 101,000,000 phones, of which 56,243,206 were in this country on Jan. 1, 1956.

Dept. of Odd Jobs

JUST TO PROVE she's really a versatile lady, Amanda, the Bell System Answering Device, has taken to bird watching. Or, at least, to helping Boston bird lovers spot their little feathered friends.

Dialing the correct number gets the bird fancier a recording prepared by the Massachusetts Audubon Society. The recording tells what birds have been sighted in the locality of late.

And the caller gets the chance to put in his licks. The recording ends with the polite question, "*And what birds have you to report?*"



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